Telephony.

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H. D. FARGO, President and Treasurer
S. R. EDWARDS, Editor and Secretary

H. D. FARGO, Jr., Vice-President and Advertising Manager
D. C. SORENSEN, Western Advertising Manager

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THE SURPLUS OF FREE ADVICE INCLUDES TELEPHONE RATES

If there is one thing this country is over-stocked with it is unsolicited advice. It bombards us from all quarters, through the printed page, over the radio and by word of mouth. After a fashion, it covers a limitless range, from how to get rich to how to cure a golf slice. There is no escape from the deluge of advice that pours in on everybody day and night.

* * * *

One redeeming feature of this deluge is that most of the advice doesn't cost anything, and, it might be added, that usually is all that it is worth. Ordinarily, what you get for nothing is worth that and no more.

These observations are inspired by reading a list of suggestion issued by a big real estate concern telling prospective home-buyers what they should bear in mind in selecting a place to live. Most of these "tips" have to do with the desirable features the home-buyer should insist upon before signing on the dotted line—and, of course, all such features are to be found in the property offered by that particular concern.

One suggestion emphasized reads: "Be sure the service rates for telephone, gas, electricity and water are reasonable."

* * * *

Now, the chances are that not one home-buyer in a hundred gives even a passing thought as to whether the telephone rate in Commuterville is $3 or $4 a month. Neither will he do so after reading the list of warnings compiled by the real estate concern as to what he should remember when he buys a residence.

The reason is that, generally speaking, the public knows that utility service is the cheapest commodity people buy.

* * * *

The rates for telephone service, for instance, are not only reasonable but exceedingly low compared to the essential value the telephone gives to its users. The same may be said for gas, electricity and water—and especially is this true when these utilities are operated by private companies that appreciate the need of deserving and winning their customers' approval by efficient service and reasonable costs.

However, when the service is rendered by a political administration—government operation, in other words—there is less assurance of this consideration for the public's rights. The records show that. The time for the home-buyer to worry about utility rates is when political control runs the utilities.

* * * *

A striking example of this came to hand last week when the people of Chicago suddenly learned that their municipal water department faces a deficit of 12 million dollars. The politicians responsible for this mismanagement are getting uneasy, and have asked the Association of Commerce to take charge of the tangled mess and try to straighten it out.

Those in the business of giving advice to home-buyers might well save themselves the trouble of warning people about reasonable able service rates. They have the reasonable rates now, except, as stated, where political management is at the wheel and furnishes poor service at a cost that the taxpayers have to pay in the end.

The advice-givers ought to cut out that part of the sermon referring to service rates and devote the space, for instance, to a campaign on the more important subject of the elimination of the ragweed from vacant real estate subdivisions that make hay fever victims suffer.

It may be true that not all people have hay fever, but, there is more danger of their catching that disease than of being injured by too high utility rates.

* * * *

So far as telephone rates are concerned, a large majority of the public are satisfied if the service they are paying for is good. It is when the service sags down, or the automobile won't run smoothly, or the radio set doesn't work, that people begin to think of their cost and wonder if they are paying more than the things are worth. In this day of liberal buying the national tendency is not to haggle over the price if the commodity is satisfactory—and isn't that common sense?

There are enough automobile and radio makers competing for business to keep prices in those lines within bounds, and of course we all know that the regulatory commissions are on the job to control the rate for utility service.

What people want is the best service possible, and they are willing to pay the cost if they know the facts. Some day, when rate commissions are more progressive, they will lay more emphasis on service than rates. They will insist both on the companies giving the service and on their getting adequate rates, for the two propositions, of course, go hand in hand.

The merchant who sells goods below cost will either have to cut the quality or go out of business. The same rule applies to service companies operating on inadequate rates. Usually it is the service that deteriorates.

* * * *

One of America's most successful business men used to say that he desired all concerns with which he did business to prosper; otherwise, he knew that his own prosperity would be short-lived. This applied both to those he bought from and those he sold to. On more than one occasion he canceled a contract for materials when he found the price he was paying did not yield the other fellow a fair profit. That was sound business, for it gave him a reputation that was worth untold money to him in the trade.

The same rule applies in utility service. If the public wants first-class telephone service it must see to it that the company gets adequate rates. The progressive rate commissions in the future will make that a part of their business, and then see that the service rendered is up to standard. Such a policy will be in the public interest, and will carry out the real intent of the ideal utility regulation law.

* * * *

One of the ways to have a good time this summer is to sit on the side-lines and observe the contortions of the fence-straddlers in the pending presidential campaign. It is a little early for them to determine who will win in November and step into President Coolidge's shoes next March, so most of the wise fellows who are analyzing the political situation this month are having a terrible time.

They may have personal convictions, and possibly private opinions as to the winner, but the fear of guessing wrong is bringing out more non-committal, nicely balanced, fifty-fifty political prognostications in this campaign than has ever before been known.

As election day approaches, the campaign will heat up and the fur will fly—also bricks. This is a great country, busy, alert and intent on going ahead. Despite the political clamor the rank and file of the people will go on with their every-day work and listen to the campaign artillery as an incident that happens along every four years. Meanwhile tempers should be kept cool, for the sober judgment of the people throughout the country will settle the contest three months hence in November—and, "it won't be long now."

COMING CONVENTIONS.

United States Independent Telephone Association, Chicago, Hotel Sherman, October 16, 17, 18 and 19.

Independent Pioneer Telephone Association of the United States, Chicago, Hotel Sherman, October 18.

Selling Company and Product to Public

Little Evidence of Division of Work of Different Departments in Smaller Companies—Ways of Selling Organization to Public—By-Products of the Telephone Business—Address from Nebraska and Iowa Annual Conventions

By H. F. McCulla,

Assistant Commercial Superintendent, Lincoln Telephone & Telegraph Co., Lincoln, Nebr.

In the larger telephone organizations, as we know, responsibilities and functions are necessarily divided among several departments. In those larger organizations, due to the number and variety of responsibilities and functions, it is necessary to draw rather definitely the line of demarcation between departmental functions.

In the smaller organizations, this line is not so necessary, nor is it as definitely drawn, yet it is in evidence and of course serves a very good purpose. However, in the smaller exchanges of even the largest company you will find little evidence of any division of responsibilities by departments. The reason for the disappearance of this line of demarcation is apparent when one considers how illogical it would be in the small exchanges to attempt to functionalize in too great a degree the activities of the various departments.

There may be an exception to this statement as applied to the smaller exchanges in the case of the traffic department, because this department rather logically sets itself apart from all other departments. This statement, however, is literally true of the other two departments usually found in even the small exchanges, viz: the commercial and plant departments.

Attempting to establish the origin of the use of the word "commercial" in connection with a particular function of a telephone organization, we find that it was used in the sense of meaning "business."

In other words, the commercial department or the commercial representative of a telephone organization is charged with the responsibility for establishing and carrying out the business activities. This explanation tends to clarify the term "commercial" as applied to a telephone organization, does it not?

What about the subject of commercial or business activities? Briefly, they may be considered as of two types: First, those activities having to do with the internal operations of the telephone company; and second, those having to do with the external operations of the telephone company as it concerns the telephone-using public. It is about the latter type of activity that we wish to talk.

There is an old story that runs something like this: If a man can write a better book, preach a better sermon, or build a better mouse trap, even though he be a hermit and live in the woods, the world will beat a path to the door. That particular adage might have applied years ago even to the rendering of telephone service.

Certainly, it does not apply today. We may admit that at any one time in the history of the telephone industry, telephone companies were willing to hide themselves away from the beaten path of progress and wait for the public to come to them for service. This may have been a safe policy in the early days of the industry when the law of supply and demand was all in the favor of demand, the supply being very limited.

Then also, the business policies of telephone organizations in the early days of the industry were no doubt different from the policies of today. At the same time, business in general was doubtless conducted on a somewhat different basis from that which it is conducted today. We will grant that all of these factors entered into the literal application of this old adage.

But the thing that we are interested in today is the application of the revised version of this statement. In other words, even though you can write a better book, preach a better sermon, or, build a better mouse trap, it behooves you to move your place of business out on the highways of commerce, out along the path of industrial and business progress, if you hope to keep pace with the times.

How are we going to apply this so-called revised version to the telephone business of today? It seems to me the logical medium is the one of commercial or business activities.

Let us not be confused in our consideration of this subject by attempting to talk about a particular department of a telephone company. We are not so concerned with departmental responsibilities as we are with getting the job done.

We might even broaden the scope of our treatment of this subject to say that any activity of a telephone company that has a bearing on the relationship between the company and the public which it serves is in some degree a commercial or business activity.

This statement may appear to be rather broad, but it was purposely meant to be. Why? Because the mediums of contact between the telephone organization and the public are so numerous and so important that each and every one of them must receive our serious consideration.

This question may arise in your mind: What is the justification for any particular consideration of commercial or business activities? In other words, why should we consider this matter at all? I believe that the justification is apparent when we stop for a moment to realize that today business of all kinds is done on the basis of salesmanship and not on the basis of order taking.

A few years ago, immediately following the World War, business resolved itself into one of order-taking, with very little need for salesmanship. A lot of folks received credit for being salesmen simply because they could go out in their particular field of endeavor and come back with more orders for business than the production end of the business could possibly handle.

That day has passed and we need not expect to see it again within the span of our lives. So we are necessarily concerned with the selling of our organization and our product to the public. Hence, the justification is obvious for a telephone organization taking the initiative in selling to the public its organization and its product.

What is the logical way in which to approach this subject which has so far been rather indefinite as far as reference to any specific item of commercial activity is concerned?

We might answer this question by asking another: How would we start to build a building? Or how would we start to get ready to build a building? Would we gather all of the material, have it deposited near the site of the proposed structure and then start thinking about the plans for building? Hardly.

How would we go about it to build a telephone exchange property? Would we order the poles, the wires, telephones, cables, crossarms and all other units of

"Someone Has Aptly Said," Says Mr. McCulla, "That a Man's Judgment Is No Better Than His Information, and I Think That This Applies Pertinently to the Telephone-Using Public in Its Attitude Toward the Telephone Business."

telephone property that would be needed, have all of these units delivered to the scene of building and then start talking about our specifications and our plans for construction? The answer is most apparent.

Speaking of building, permit me to digress for a moment from the main theme of this talk to call your attention to one of the outstanding feats of building that has been performed in this part of the country. I refer here to the erection of our new state capitol, the building in which we are all so vitally interested.

I have watched the progress of this building for several years. I have noted with interest the excavating of enormous cavities, the filling of these cavities with cement and steel piers and then the shaping of the structure of brick, mortar, cement, steel, and rock; each brick in its proper place, each piece of granite and limestone fitting exactly into its respective niche; each steel beam slipping into the exact spot intended for it and matching up to the thousandth part of an inch; hundreds of men moving about at their task in orderly fashion, each man with a particular job to perform and performing it well.

Do you get the connection? Back of all of this orderly procedure was the thought and careful planning of at least one individual and no doubt a number of individuals.

There seems to be no good reason why we should not approach our subject today in just such a fashion. So to be logical, let us arrange these items of commercial activities in some reasonable order, program them, as it were.

What do we find first in this program of commercial activities? Properly, the item that should be considered first would be the one which has to do with the selling of our organization with its problems and policies to the public—the item of advertising, or publicity, or both.

When we think of advertising or publicity, we are too prone to think of newspaper space and let it go at that. Our approach to this subject includes the item of newspaper advertising as only one among a number of items. Every contact made with the public through whatever medium it may be should be considered as an opportunity for advertising our organization.

What is the first step in this program of selling our organization and its products to the telephone using public? It seems that the first thing for us to do is to familiarize ourselves thoroughly with the progress which has been made in the telephone field.

We cannot expect to tell our story in an understandable way unless we are thoroughly familiar with it ourselves. Then tell them of our problems; figuratively speaking, lay our cards on the table. We may not think now that there will ever come a time when we will want to go to the public with a rate increase program.

These rate increase programs have a faculty of coming to light at unexpected times and it behooves us to have our relationship with the public in good shape when it does become necessary for us to ask for more revenue.

Then tell them about the progress in the art of telephony. Tell them about the developments that have been made through the research work that is carried on constantly. Tell them, for example, about television, transatlantic telephone conversations, the artificial larnyx, the artificial receiver or teletactor, about telephone repeaters, improved permalloy, the new metal for relay and repeating coil cores.

You will be surprised at the reaction that you receive from the public when you tell them about the tremendous strides that have been taken by telephone people in developing all of these factors of transmission.

The next question may well be—how are we going to tell the folks about these things? It seems to me that there are two principal mediums: First, by personal contact between the telephone company employes and the public; and second, by the use of the printed word. By far the more valuable of the two, of course, is the medium of personal contact.

Consider the following few examples of opportunities for taking the initiative in telling the public about our business:

You remember the story to the effect that

Mohammed, upon discovering that the mountain would not come to him, went to the mountain. The principle of this statement certainly applies to the telephone business in our consideration of this subject today.

Ask the organized groups in your community to visit your exchange and see for themselves the equipment that serves them. You will find that all of these groups will gladly accept an invitation to visit your central office. Among these groups may be found your community club, your parents and teachers' association, your school groups and perhaps a civic club.

Demonstrations Before Organizations.

Then take the initiative in arranging for members of your employ personnel group to appear before these same organized bodies for the purpose of telling them about the telephone business. Your first reaction to this suggestion may be something like this: "We have no one in our organization who can qualify as a public speaker." Well, frankly, we are not talking about public speakers.

We are talking about telephone people who have the courage of their convictions and can get up before a group of folks and tell them interesting and simple facts about the telephone organization and the thing it is attempting to do. That is not a difficult process and the reaction that you will obtain from your listeners will make you wish that you had attempted this particular type of advertising a long time ago.

Another medium for this activity is the use of a small switchboard demonstration unit. If you are operating a magneto exchange, use a small magneto board; if you are operating a common battery exchange, use a common battery board.

Take the initiative in making arrangements with your organized groups to give this demonstration. In other words, you carry the message to your people and not wait for them to come to you.

Another medium is through the active participation by representatives of your telephone organization in your commercial or community clubs. Use this medium to spread the truth about your organization to the business and professional men of your community.

Take Proper Place in Community.

Take your place where you rightfully belong as telephone people in the life of your community. Remember, it is your town where you probably have your money invested, certainly where you are making your home. You will probably surprise yourself if you will compare your standing in the community with the standing of other business men.

You know there was a time when telephone folks were prone to sit back and let the other fellow take all of the credit for being an asset to the community. That time has passed.

At this point, I want to refer briefly to another commercial activity that is rapidly gaining favor with the telephone-using public. This activity is as applicable to a small exchange, as it is to a large exchange; and is the one of commercial service studies. The telephone-using public has in a large measure taken the initiative in attempting to determine the telephone facilities and service necessary for its use.

When you stop to analyze the matter, this is just the wrong approach to the subject. In other words, if one were in need of the services of a doctor he would not be apt to call on the telephone company for a diagnostician. The reverse most assuredly holds true and telephone companies at large have begun to realize this and have taken the initiative in considering the needs of telephone subscribers and interpreting these needs in terms of service and equipment.

The best time to do this, of course, is before service is established. It is surprising how grateful your subscribers will be for this service when they understand that it is a part of the broader service that the telephone company is trying to give.

Due to our delay in getting started on this program a large percentage of our service is already established and this forces us to consider a somewhat different service survey situation in that we are surveying telephone service and facilities already established.

Service Survey Situation.

Do not infer that I am talking necessarily about large private branch exchanges or service conditions where there are a number of telephones involved. Service studies do apply to these conditions in a greater degree than they would apply to conditions where but one or two telephones are in use. But the practice is as logical in the one case as the other.

In rendering this service, every factor that enters into the giving of service should be considered—the number of incoming and outgoing calls to the subscriber's station, the character of these calls, particularly as divided between business and personal, the number of calls per hour reflected in the ability of the circuit or circuits to handle the load, the location of the subscriber's instrument, not only from the standpoint of availability to the subscriber but also from the standpoint of environment, the condition of the equipment, its use both physically and orally by the subscriber, and all of the other elements with which the average telephone man is familiar.

If you have not already offered this service to your users, we suggest that you try it and I am sure that you will be gratefully surprised at the splendid reception given the idea by your subscribers and the splendid reaction that you receive from them.

Now let us discuss the use of the printed word as the medium for telling the public about our business.

Some telephone companies have used window displays of telephone equipment to excellent advantage. It is true that the telephone company does not always have a suitable display window in its building, but it is entirely possible to make arrangements with one or more local merchants to use their display windows for your purposes.

Use of Printed Word.

It may seem a trifle presumptuous even to think of asking the merchant to turn over his show windows to you when he needs them for his own business. However, a good way to get around this point and one that is productive of a better understanding between the merchant and the telephone organization is to work out what is termed a cooperative display and through this medium tie the merchant's business in with the telephone business. A rather reasonable solution, is it not?

Then as a second medium, you have your newspaper space which is always usable and always an excellent medium for advertising and publicity.

The use of motion picture advertising in your local theater offers an excellent medium for getting across messages about specific subjects. Another idea is the use of pamphlets telling about the different phases of the telephone business.

In fact there are so many different ways of selling your organization and its products to the public that I sometimes feel we are just skimming the surface instead of doing a really thorough job.

Up to this point we have talked about selling the organization to the public. Now let us talk for just a few minutes about selling specific items of revenue production. After all, one of the major functions of the commercial people of a telephone company is to sell service; in other words, to be responsible for the production of revenue.

Selling Items of Revenue Production.

When we think of this phase of our business we are usually concerned immediately with the thought of both main and extension telephones. In most telephone companies the revenue received from main and extension telephone rentals represents the larger per cent of the gross revenue. That is itself is a good reason for giving these two items serious consideration.

I think that at times commercial folks are inclined to be more interested in selling service to non-subscribers than they are in retaining present subscribers on the books. In considering the sale of rental service we might well think of it in the following order:

1. Keep the subscribers who are already receiving telephone service.
2. Sell service where the plant is already in existence and where little, if any, additional investment will be required.
3. Sell service where it is necessary to build plant, justifying this expenditure in view of immediate or potential revenue production.

In most organizations, toll revenue represents the second largest item of revenue. For that reason, every reasonable effort should be made to develop and sustain our toll business. Every time a subscriber is added to our list there is a possibility of increasing your toll revenue as well as your rental revenue.

Just like other industries that have developed the sale of by-products the telephone industry is falling in line. What are the by-products of a telephone business? From the general point of view we might say that all items of revenue other than rental and toll are revenue from by-products.

Some of these are: Revenue from space sold in telephone directories; revenue from extra bells, extension gongs, keys, buzzers, monophone sets, extra length cords, shelves. It would be surprising to know the percentage of gross revenue some of our larger companies represented by the revenue received from these so-called by-products.

There has recently been added the factor of revenue production from the handling of remote control radio programs.

Another item recently added is that of the sale of public address system service.

So you see that when we start to arrange all of these items in a logical manner we find that our time is well spent. In addition, we have this thought brought forcibly home to us: that in the evolution of the telephone business so many new phases are constantly arising that it behooves all of us to keep abreast of the times.

You will notice that no mention has been made previously in this talk to the subject of public relations. We have purposely refrained from mentioning this subject because to most of you it is becoming a rather hackneyed and trite subject. However, we sometimes are perfectly willing to consume the same dose of medicine if it is given to us in an unfamiliar form. That is the reason I have talked about commercial activities and refrained from mentioning public relations.

What is the unfamiliar form in which you might find our old friend "Public Relations"? Why in the form of "Commercial Activities." Why? Let us answer this question by asking another: What are public relations? Simply the relationship between the public and the telephone company.

What determines this relationship? The initiative or lack of initiative of the telephone company in selling or not selling itself and its products to the public. Who determines this relationship? Those charged with the responsibility for contact with the telephone-using public. Rather a simple definition, but I believe you will agree with me that it contains the gist of the much-discussed subject of public relations.

Abraham Lincoln has been credited with having made the statement: "Public sentiment is everything. Without it nothing can succeed; with it nothing can fail." We, as telephone people, recognize the absolute truth of this statement, for without public sentiment in our favor we could not hope to conduct a successful business.

So with this thought in mind I believe that we can summarize very briefly the objective of all commercial activities; viz.: the bringing of the public into such close contact with the telephone business, with such an intimate knowledge of the policies and practices of the telephone business that they will be at all times in sympathy with the telephone business.

After all, in most cases the cause for misunderstandings is just the lack of proper information. Some one has aptly said that a man's judgment is no better than his information, and I think that this applies pertinently to the telephone-using public in its attitude toward the telephone business.

Some one has put this thought in a few simple lines, the theme of which is certainly most adaptable to this subject:

"This is the law of the jungle,
As old and as true as the skies,
And the wolf that must keep it will prosper,
But the wolf that shall break it must die.
As the creeper encircleth the tree trunk,
So the law runneth forward and back;
For the strength of the pack is the wolf
And the strength of the wolf is the pack."

Prices in the Metal Markets.

New York, August 6—Copper—Firm; electrolytic spot and future, 14¾c. Iron—Quiet; No. 2, f.o.b. Eastern Pennsylvania $19@20; Buffalo, $16@17; Alabama, $15.50@16. Tin—Firmer; spot, $48.12; future, $47.12. Lead—Steady; spot New York, 6.20c; East St. Louis, 6.00c.

THE SORE THUMB

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

There is no one so hard to deal with, especially in business, as the person who is given to self-pity. Self-pity is a badge of weakness. When we have contacts with people who are afflicted in this way, we have a real problem, one that follows us from our desk, lingers with us through our meals, and edges into our hours of recreation.

I wonder if we are justified in retaining such persons in our organization. They are unable to do a 100 per cent job for us. Someone is continually getting in the way of their feelings, resulting in their tears, anger, or sullenness. They want to rank in salary with employes who do 100 per cent work; moreover, they want special concessions made for them. They want to be noticed. What don't they want?

I once met a chief operator who had a problem of this sort thrust upon her, due to an agreement made between two telephone companies when they consolidated. The agreement was that a particular operator be retained in the service of the new organization. She was crippled in some manner but I do not think this disqualified her for service nearly so much as her self-pitying state of mind.

She was continually asking for concessions to be made in her case regarding rules and regulations. For example:

She could not reach connections properly; she could not have her chair adjusted so as to sit well up to her work. It gave her a side-ache, she claimed. She could not have the windows opened or the fans turned on—no matter how uncomfortable it was for other employes—she could not stand it. She could not stand this or that, and she closed all arguments with tears. She was like a sore thumb that someone was always bumping against.

One day the chief operator, during one of her frequent absences from the board to indulge in more tears than she had time for at the board, said to her: "Miss Adams, the fact that you are crippled is *your* affliction—*your* liability. Why make it your employer's?"

I think this chief operator said just the right thing.

I believe, as a rule, employes who are handicapped with some physical defect do not measure up to service requirements.

The employes who are a real affliction and liability to their employer are those who are always imagining they are being mistreated.

MORAL: Oh, what an inconvenience is a sore thumb! You cannot do anything nearly so well with its assistance. It is continually getting in the way and being bumped. But how much better off you are if you have a sore thumb than if you *are* a sore thumb.

Routine Tests—Substation Inspection

Success of Automatic Due to Methods of Inspecting Which Prevent Trouble—Line Record Cards Essential to Proper Maintenance—Rules for Troublemen to Follow—Routine Check of Stations Will Be Found to Improve Service

By Ray Blain

Much has been written with reference to routine testing of central office equipment to prevent trouble affecting the operation of circuits, but very little has been mentioned about the application of the same principles to outside plant and subscribers' station equipment.

It is true that the great success of the automatic—its low maintenance cost and the ease with which it is maintained—is due to a great extent to the complete methods of routine testing and inspecting which prevent trouble. Similar tests, applied to manual central office equipment, have also been very effective—in fact, reduced the actual trouble reported about 50 per cent. The result of this is more satisfied subscribers, for they receive better service, and the maintenance is also much cheaper.

Tests and periodic inspections can be conducted on the outside plant and station equipment that will prove even more beneficial than those on the central office equipment. The local troubleman in the average exchange will have many slack periods in fair weather that can be utilized to good advantage in making these substation inspections.

Record Cards Essential.

When the troubleman clears the last case of trouble on the slate, the wire chief can designate some nearby station for him to inspect. After such inspection has been completed, the wire chief can send the repairman on to the next case of trouble, if any has been reported, or to another inspection.

The first essential to the proper maintenance of any exchange is a good set of line record cards kept up to date at all times. This record can be made up in any form, but ordinarily should show the following information:

Name of subscriber, street address, equipment installed, cable number, pair number, terminal number, and in some exchanges the resistance of the subscriber's loop.

In addition to this information, there should be space on the cards for the recording of all trouble reported on the line as follows:

Date and hour trouble is reported, by whom reported, nature of trouble, what the test shows, what trouble found, date and hour cleared, and by whom cleared. Some exchanges desire that a space be provided to indicate the time the line was out of service which is sometimes valuable information in settling disputes.

A complete trouble record which has been correctly maintained will be found very valuable when considering reconstruction of certain sections of the outside plant. It will also be found valuable in tracing down repeaters or chronic cases of trouble.

The special substation inspections should be recorded in red ink or pencil on the card record, with a brief description of the corrections made.

The troubleman should at all times carry a supply of inspection forms similar to that shown in the accompanying illustration, to note the different parts covered and the immediate remedial action taken; also to make note of the needed repairs that he is unable to take care of at the time due to lack of proper tools, material, etc.

Necessity of Inspection Forms.

These forms should be carried in a suitable holder similar to the aluminum order books, so that they will be in good condition and available for use at all times. These reports of the inspector should be checked by the wire chief or someone else in authority, before filing, to determine what action is to be taken on defects which the inspector was unable to clear, and the advisability of following out the suggested improvements.

As soon as the troubleman arrives at the subscriber's station to make an inspection, he should immediately call the wire chief and have the number ordered up on test. The line should then be given the regular continuity and ground tests, as well as tests for insulation resistance and leakage.

Each wire should be tested to ground and then between the two wires of the pair. Tests of the transmission should be noted by talking in the usual tone of voice over the line and any defects investigated. If an artificial line is installed, about 30 miles of cable should be cut in circuit and the transmission noted.

Measuring Loop Resistance.

If a record of the subscriber's loop resistance is maintained, this should be checked and any increase in this resistance should be investigated, for it usually indicates high resistance connections in some part of the line. This resistance test can usually be made with an ordinary 100,000-ohm voltmeter and about 50 volts of battery, which is accurate enough for the purpose. If more accurate resistance measurements are required, the Wheatstone bridge must be used.

On test boards equipped with a milliammeter the current flow through the transmitter at the subscriber's station should be checked in order to determine if the proper type transmitter is being used. Extra long lines with a low current flow should be equipped with a more sensitive transmitter.

If the transmitter is found packed, it should be tapped gently on the back with a wooden-handled screw driver, or some other instrument that will not cause injury to the nickel plating. If the transmitter should again pack after this procedure, it is then best to replace it with a new one and send the defective one to the factory for repair.

If the receiver cap is found loose, it is best to remove and clean the inside of the cap, the magnet heads and the diaphragm. If the diaphragm is dented, bent or in any way corroded, it is best to replace it with a new one, for diaphragms are inexpensive. It is almost impossible to restore one to such condition that it will operate satisfactorily. After cleaning, the receiver should be reassembled and the cap screwed down tight.

Make sure that all cord tips and line-wire connections on the terminal strip in the bell box are tight and the connections clean. All broken or nicked mouthpieces, receiver shells or caps should be replaced. Test for cut-outs by talking over the line to the wire chief while bending the cords throughout their length, especially near the tips. Listen closely for noise and cut-outs. Have the wire chief test the bells by ringing on the line. Adjust the bells to a clear, loud ring, or to a tone that is satisfactory to the subscriber.

Make Thorough Examination.

Examine all connections on the protector to make sure that they are clean and tight. Inspect carbon and micas; note that the mica is installed with the slot down and the top slightly elevated above the carbons to prevent an accumulation of dirt, causing a leak to ground. Make sure that the carbon surfaces are smooth and clean and that the metal globule, if the block is equipped with one, is not blistered. Replace all micas that show burns at the edges. Note that fuses fit tight in the holders and that connections are clean and tight. See that the protector is not installed near curtains or other inflammable material.

Inspect the house wiring and retack it where found loose. Note whether the instrument or wiring is near a window or door which, if left open, would expose the equipment to moisture during stormy weather. Observe the nickel plating and the condition of the finish on the desk stand and bell box.

When the instrument presents an unsightly appearance, it is usually best to re-

place it with one in good condition as subscribers usually think that a shoddy instrument will not give as good service as one with a pleasing appearance. All telephone companies should take pride in having the instruments looking nice at all times. This is not difficult if the proper use is made of the new metal paints recently developed for automobile finish.

Inspect the drop wiring and note that all the tie wires are properly made, in good condition, and tight. If the drop wire is not clear of trees, trim a suitable clearance, providing that permission can be obtained from the property owner. Modern copper-clad drop wire is very serviceable unless the outer braid is damaged by a swaying limb of a tree which will cause its rapid deterioration.

The inspector should cover the equipment and wiring thoroughly and correct all conditions which might cause trouble in the near future and also unnecessary trips to the station by the repairman. How well the inspector performs this task will be indicated by the lapse of time between the inspection and the first case of trouble on the instrument or wiring as indicated on the line record card.

Substation Inspection Report

Date .....
Inspector .....
Tel. No.....Address.....
Type of Instrument.....Manufacturer.....
Report condition of the following:
Mouthpiece .....
Transmitter .....
Receiver .....
Cord .....
Bells .....
Instrument Wiring.....
House Wiring.....
Protector .....
Ground Connection.....
Drop Wiring.....
Connection at cable terminal. Are they clean and tight? .....
Action taken to eliminate defects not mentioned above? .....
Defects impossible to clear.....
Suggested improvements.....
Noted.....
Wire Chief.

Form for Use of Inspector in Reporting on Substations.

Some subscribers, through ignorance or carelessness, may tolerate a defective instrument, such as a packed transmitter or a missing mouthpiece, for years without reporting it. There have been cases where a telephone has been in service as high as 15 years or more without a single case of trouble being reported on it.

These defects which are not reported by the subscriber not only affect their own service but the service of others with whom they may be connected as well. This very condition accounts for many tests, "OK's" and found "OK's" from parties reporting their own telephone out of order, when it was actually due to the instrument of the party with whom they were talking.

There is no doubt that a routine check so that all stations are regularly inspected at fixed periods about once per year will do much toward improving the service and lowering the maintenance cost per station.

I have never been in favor of the repairman making other than minor repairs to an instrument on the subscriber's premises. When it is necessary to replace a condenser, an induction coil, or any part requiring soldered connections, there is always a tendency toward poor workmanship due to difficulties under which the troubleman is required to work. In a case such as this, a bad connection will mean a repetition of the trouble. It is cheaper to replace an instrument in the first place with one from stock and then give the defective one a thorough overhauling and cleaning in the shop before being again installed. Even though a subscriber's troubles are for the greater part imaginary, a change of instruments will usually satisfy him.

Subscribers generally appreciate having a representative of the telephone company call to look over their instrument, even though they have not reported trouble on it. Ask ten subscribers in any first class exchange if they are having any trouble with their telephones, and nine of them will have some trifling defect to mention. It may be true that the greater part of these defects are imaginary and not serious enough even to the subscriber to report them; but just the same the subscriber will appreciate the fact that they are considered and investigated.

For this same reason I have always considered it advisable for a troubleman to make a visit to a station where trouble has been reported, even though the line and instrument test OK and it is thought that the trouble was due to some other station being connected to it or that a defective switchboard cord caused the complaint.

To sum the plan up in a few words, when the troubleman has occasion to visit a subscriber's station on trouble, instead of just clearing the condition that actually caused the trouble, he should go over the equipment thoroughly and clear all conditions that might possibly cause trouble.

As a chain is no stronger than its weakest link, and a storage battery is no better than its poorest cell, neither is a telephone system much better than its poorest station, for it is never known when a perfect station will be connected to a defective one which will reflect on the service of the exchange as a whole.

British Radio-Cable Merger Approved by Parliament.

The British government has decided to accept the report of the imperial cable and wireless conference on the proposed communications merger and will negotiate with the companies concerned with a view to drawing up an agreement on the lines recommended. The decision was announced August 2 in the House of Commons in London.

The recommendations include a merger between the Eastern, Eastern Extension, and Western Telegraph companies, and the Marconi company, combining cable and wireless communications throughout the empire. It also recommended the promotion of a company with capital of about 150 million dollars to acquire the cable and Marconi companies.

The support of the Canadian, Australian, New Zealand, South African, and Irish Free State governments has been received, and also the conditional support of the Indian government.

Debate on the merger in the House of Commons on August 2 drew a strong Labor and Socialist attack, Labor Member Walter Baker saying it to have been "a definite conspiracy to rob the empire of one of its greatest potential assets"—the government's beam wireless stations.

It was contended that the public asset, possibly worth millions yearly, has been given away as the result of a campaign by newspaper, insurance, financial, and banking interests.

The government spokesman, Sir John Gilmour, strongly resented the charges, assuring the House that the conference was perfectly free and was not subjected to undue pressure, and declaring that an excellent bargain had been made in the public interest.

"It was a good bargain," he declared, "for the state secures for the public an efficient service at the cheapest possible rate, while safeguarding the strategical position, which must necessarily depend on cables, for some years at least.

"The British government in deciding to accept the report was convinced that it was acting in the public interest and proposes to enter into negotiations with the companies with a view to reaching an agreement along the lines indicated in the report."

Boys Make Quick Work of Delivering Directories.

Fifty boys from the Young Men's Christian Association of Lincoln, Neb., were utilized recently by the Lincoln Telephone & Telegraph Co. in delivering the regular issue of the directory for that city. Specially trained for this work, in three days they had distributed nearly 20,000 of them to their proper destination. Where one subscriber was missed, a telephone call promptly brought a messenger to the subscriber with a directory.

Here and There in Telephone Work

A Novel Thought for the Telephone Pay Station.

"He profits most who serves best" is the slogan placed over a line of telephone pay stations in a Cincinnati drug store.

The owner of the store, H. G. Schmuelling, a member of the Rotary club of Cincinnati, believes that the motto should be placed by every Rotarian in some place about his place of business where employes and customers may read it. He knows of no better place in his own concern than over the line of telephone pay stations, since the eyes of persons engaged in telephoning must read. Accordingly Mr. Schmuelling had the sign painted permanently on the wall in Old English letters, done in attractive old gold.

Novel Sign for Telephone Pay Stations.

Submit Telephone News to Newspaper on Basis of Value.

C. W. Motter, public relations director for the Lincoln Telephone & Telegraph Co., Lincoln, Nebr., has been stressing in various talks he has been making before chambers of commerce and other civic bodies, not only the right but the duty of the public utilities that serve so large a part of the population, to keep the latter informed as to their activities.

In a recent address before the chamber of commerce at Nebraska City, he pointed out that society has grown so complex that it becomes increasingly difficult for any large part of it to know how the other half lives, thinks, acts or what it is trying to accomplish. This is one reason why various industries, whose progress and welfare are dependent upon the public knowing what they are doing and what they are trying to do, have organized departments for the specific purpose of keeping the public informed.

Mr. Motter believes that just as every man comes to like most other men the better he gets acquainted with them, so the people will lose as against the corporation much of the prejudice that a wrong political psychology has engendered, when they come to understand its workings and purposes. He thinks there should be complete frankness in informing the public that one of the purposes of publicity about it is to create a public opinion that is favorable as well as intelligent and informed.

In a world where so many things bid for public attention, corporations must utilize a new and special technique. That technique is publicity, handled by specialists, which differs from news only in that while both are current, truthful and interesting information, one is from the point of view of the one who desires to be informed, while the other is from the point of view of the one who desires others to be informed.

A notion, sometimes found even in newspaper offices, is that publicity is merely advertising that isn't paid for, but is not worth while or legitimate publicity. The function of the newspaper man is to print the news. The function of the publicity man is to find news that may be turned over to the newspaper to print if it is news. The publicity man is the reporter for an institution, municipality, civic organization, business or a person. Mr. Motter visualizes him as a man who must know a story when he sees one, how to write it so that it will be acceptable, and must submit it wholly on the basis of its value.

"In the case of a telephone company," says Mr. Motter, "its activities are so closely tied up with those of the city or territory served that inherently what it does and what it plans to do are of prime news interest. When we can convince an editor of this fact and when we can provide stories that can compete for space with those turned in by the newspaper's own reporters, or information that the reporters can use for stories, then the material has been raised out of the class of advertising as such because it is accepted on its own merits.

When it is judged by the editor on the same scale of values as the rest of the material in the newspaper, then it is legitimate publicity. Because newspapers depend for their continuance on paid advertising, it is unethical and downright dishonest to attempt to insert as news anything that by all standards is advertising and benefits nobody but the advertiser. Such efforts have been frequent, and they are what makes harder the task of the real publicity man.

"We go on the theory that it is impossible for newspapers to make our general offices and exchanges a part of their regular search for news; and we also are guided in what we do by the fact that there will always be fields of knowledge and news untouched by the press until somebody capable of intepreting them is given an opportunity to do so. We are thus able to get to the public much that would be otherwise lost to it, and we find the newspapers glad to get it."

Practical Notes For Maintenance Students; Induction.

By John A. Bracken.

The study of induced electromotive forces and induced currents is of prime importance to the maintenance student, because upon the principles of induction are based the operation of certain kinds of telephone equipment.

In a previous installment, it was shown that a current of electricity passing through a conductor will set up around the conductor a magnetic field. If a conductor is arranged to move across the lines of force in a magnetic field so that it will cut the magnetic flux, an E. M. F. is developed. If this conductor forms a closed circuit, an electric current will be produced in it. The electric current so created is called an induced current, and the phenomenon is termed electromagnetic induction.

It is of practical importance to de-

termine in all cases the direction the current flows only while the conductor is in motion within the magnetic field. In nature, whenever a motion takes place, there exists some resistance which tries to bring the moving body to rest. To overcome this resistance, work has to be done. The ground, for example, offers a resistance to the movement of an automobile. Such a resistance is known as friction.

If the moving force (motor) be stopped, friction will gradually cause the automobile to stop. It is exactly as if there existed a force which acts in a direction opposite to that of the motion. Again, if a boat is moved on water, the water is raised in front of the boat, which will try to drive the boat in the opposite direction, and will really do so as soon as the moving force ceases.

It is precisely the same with the moving conductor, for as it is made to travel in the magnetic field, a current is produced in such a direction as to oppose the motion of the conductor; that is, if there is a closed circuit. If there is no closed circuit, a current cannot, of course, be produced, but an E. M. F. will exist immediately the conductor moves. Just as in the case of the primary cell, an E. M. F. is present even if it happens that the terminals of the cell are not connected through a circuit.

This opposition to change in an electromagnetic system is formulated by Lenz's law, which may be stated as: "In all cases of electromagnetic induction the induced currents are in such a direction that their reaction tends to stop the motion that produces them."

Hence it follows, that to overcome this backward force of the current produced in the conductor moving in a magnetic field, work must be done to move the conductor in the intended direction, and this consumes energy. The larger the produced current, which may be changed to the resistance connected in circuit with the conductor, the larger will be the retarding force; and thus the greater must be the work which will have to be performed to move the conductor.

From this it may be seen that mechanical energy is consumed whenever a current is induced through the relative motion of both a conductor and a magnetic field.

From the law of conservation this energy must be the equivalent of the electrical energy developed; in other words, the electric current is not obtained for nothing, but a certain amount of mechanical effort must be employed. Therefore, mechanical energy is only transformed into electrical energy.

There is another and important case of electromagnetic induction to be considered. If a wire is wound around a laminated core of soft iron, and its ends connected with an ammeter or other current-detecting instrument, a deflection of the ammeter needle will be observed immediately upon the approach of a magnet pole to the iron core.

When the magnet comes to rest, the deflection at once ceases. When the magnet is taken away from the laminated core, a deflection is produced in the opposite direction.

The same effect can be observed by winding another coil (secondary) of wire over the first coil (primary) on the core and connecting it with an ammeter and the first coil with some source of electromotive force.

For as long as the current from the source of E. M. F. flowing in the primary coil remains constant, the ammeter needle will not be deflected. But as soon as the magetizing current flowing in the primary coil is strengthened or weakened, started or stopped, a deflection of the needle will be observed; and the greater the variation of the magnetizing current in the primary, the greater will be the deflection of the ammeter. Thus an E. M. F. is always induced in a winding surrounding an iron core if the magnetism of the core is either strengthened or weakened.

The construction of the apparatus described constitutes an "induction coil" or "transformer" much used in telephone practice.

THE PESSIMIST.

By Buck.

There ain't no use o' talkin,' I ain't got a single chance to git ahead. The more I try my fortunes to enhance, the deeper in I seem to git, with prices so durn high. Ole Lady Luck has done gone hit me right smack in the eye.

Subscribers don't come in an' pay their rental an' their toll as they had oughta do, an', say, to save my orn'ry soul, I simply cannot figure out how I kin pay my bills to git the discount; an' no doubt I've et a ton o' pills, so I will just feel equal to the job, an' that's no bluff.

Last night my lineman made a stew—said he don't git enough to keep the wife an' seven kids! Why, fifteen bucks a week should buy their grub an' clothe an' lids an' keep 'em lookin' sleek! But, how kin I, when all the luck's again me, hike his pay? I've only forty thousand bucks saved for a rainy day.

Yes, Lady Luck has given me a dog-gone measly twist—enough to make a feller be a chronic pessimist.

Submarine Telephone Cable to Be Laid in Missouri River

The first submarine type cable laid across the Missouri river is to be placed at Sioux City, Iowa, this year.

The new cable will replace the present aerial cable across the combination bridge. It now is being manufactured and will be laid in the fall. Need of greater facilities than are provided by the aerial cables made the laying of the submarine connection advisable, Northwestern Bell Telephone Co. officials said.

The present cables being used contain 24 pairs of wires each and are of okonite, which is lighter than the usual lead-covered cable but which requires frequent painting, adding to the maintenance cost. They also are exposed to vibration, wind and sleet hazards.

Unusual hazards for a submarine type cable are presented by the Missouri river with its shifting channel, drifting trees and ice. To overcome this, the cable will be laid snake fashion, providing enough slack so that the cable can adapt itself to any changes or deepening of the channel. It will hold firm under great strains, as it will have a breaking strength of 130,000 pounds and will be chained to a concrete reinforced anchor on each side of the river.

The new cable will be a one-piece affair, 2,311 feet in length. It will weigh 2.36 pounds to the running foot, making a total weight of 54,500 pounds. The shipping weight with reels will be more than 30 tons. It will contain 160 pairs of wires, which will be ample for requirements for many years to come.

The cable will be laid on the downstream side of the bridge. It will be buried about four feet where it crosses any portion of the river bed now exposed. It is expected to work down to a permanent level in time. Work of laying it and making the necessary connections will take about 30 days.

Announce Time and Place for 1929 Oklahoma Meeting.

Oklahoma City has been chosen by the executive board of the association as the place and March 12, 13, 14 as the dates for the 1929 state convention of the Oklahoma Utilities Association. This will be the 11th annual convention of this organization.

The attendance is expected to be about 1,000, the registration including representatives of the electric, gas, telephone, and

electric railway companies of the state, and of manufacturing companies supplying machinery and appliances related to the utility industry. L. W. Scherer, of Yale, is the president of the association.

Minnesota Conferences Giving Special Attention to Rural Lines.

This year's series of district conferences of the Minnesota Telephone Association held in the southern part of the state was unusually successful. Much credit is due the local managers at the points where conferences were held for their share in carrying out arrangements for the meetings which contributed so largely to their success.

Every meeting was well attended, and each one present took part in the discussions or asked for further information at the round table conferences. Many comments were received by Secretary J. C. Crowley on the moving picture films exhibited through the courtesy of the Northwestern Bell Telephone and the Tri-State Telephone & Telegraph Co.

Analysis of the registration at the meetings in southern Minnesota is given in the following table:

	Companies Represented	Women	Men	Total
Wabasha	6	16	26	42
Lanesboro	13	21	28	49
Hollandale	13	19	42	61
St. Peter	17	50	59	109
Fairmont	12	48	22	70
Slayton	8	33	32	65
Granite Falls	10	20	28	48
Glencoe	11	37	19	56
Totals	90	244	256	500

A special effort was made this year to have as many as possible of the rural line company representatives present for the purpose of impressing upon them the necessity of following proper maintenance. In many cases the officers of these companies have made many inquiries as to the best method of procedure to follow in rebuilding the rural lines.

At each of the conferences held, there was the operators' school in charge of Miss Elsie Mueller, traveling chief operator of the Tri-State Telephone & Telegraph Co. J. W. Howatt, supervisor of telephones for the Minnesota Railroad & Warehouse Commission, suggested that all managers assist the farm line companies, and advise with them relative to maintenance and reconstruction of their lines.

Among the officers of the association participating in these conferences were: Vice-President Irving Todd of Hastings, G. M. Dwelle of Lake City, Jay Greaves of Glencoe, and President P. M. Ferguson of Mankato.

The conferences in the northern part of the state are scheduled as follows:

Crosby, Monday, August 13; Park Rapids, Tuesday, August 14; Long Prairie, Wednesday, August 15; Starbuck, Thursday, August 16; Annandale, Friday, August 17; Fergus Falls, Tuesday, August 21; Ada, Wednesday, August 22, and Argyle, Thursday, August 23.

Those in Attendance at District Meeting of Minnesota Telephone Association at St. Peter. This was the Banner Meeting of the Series in Southern Part of State, Having an Attendance of Over 100 Representatives from 17 Companies.

Nebraska Association to Hold District Meeting Next Week.

The Nebraska Telephone Association will hold a district meeting at Palisade, Nebr., on Tuesday, August 14. Those in attendance will be guests of the association at lunch.

No definite or fixed program will be attempted. The meeting will take the form of round table discussions and any one may bring up for discussion any subject in which they are interested.

The association has arranged to have people present who will discuss problems pertaining to commercial, plant and accounting work. A representative of the Nebraska State Railway Commission will discuss telephone accounting. Transmission engineers will give an actual demonstration in circuit testing, and will show and explain how to eliminate those conditions which make for poor service complaints.

"For the reason that we believe all operators have an opportunity to attend traffic conferences held by the larger companies," says Secretary George M. Kloidy, "traffic problems will not be discussed at this meeting and the operators are not asked to be present. We hope to see a good representation from all other departments of the industry, and we are sure that any part of the program will make a trip to this meeting worth while."

"A Telephone in Every Bath Room," Hotel Slogan.

Nowadays, telephones are a part of the equipment of the guest rooms of every first-class hotel. A telephone in every private bathroom, however, is an innovation, but one that may become a part of the furnishings of the newer, recherche hotel.

One of the newest, distinctive hotels of this class in Washington, D. C., designed to carry service to its patrons to the 'nth degree, has a telephone in every bathroom.

From Ohio Convention Traffic Meeting

Helping Suggestions on Various Phases of Traffic Work—Papers Presented at Traffic Meeting of Ohio Association's Annual Convention—Courtesy, Accuracy, CLR Method and New Applicants Among the Subjects Discussed

Courtesy and What It Means to Long Distance Service.

By Miss Georgia Garver,

Chief Operator, Ohio Central Telephone Corp., Wooster, Ohio

There are three big essentials to good telephone service—courtesy, accuracy and speed.

Analyzing the first part—courtesy among operators covers a vast field. It means not only your operators or mine but all of them in general, small offices as well as large.

It is a hard problem to establish courtesy among long distance operators. You may have the best trained operators in every way, but while working out on a call if they should come in touch with an operator that is up in the air about something, nine times out of ten your operator will come back in the same manner.

Courtesy means a lot to long distance. Being kind to subscribers encourages them to use long distance service. If they had to deal with snappy operators they would rather write or send telegrams, but if they know they are going to be greeted with kind voices, it will be a pleasure for them and business for us. Long distance service is one thing that we must make the people like. On local they use it as much or little as they like, but long distance must be sold and it is up to the long distance operators to do it.

It takes the best that is in us all to meet our subscribers with a voice with a smile but we must not forget that it is not what we say but how we say it.

Advantages of Combined Line and Recording Method.

By Mrs. Helen Sellers,

Toll Instructress, Lima Telephone & Telegraph Co., Lima, Ohio

There is no system which plays a more important part in the world than the telephone. Every telephone company is constantly seeking ways and means for improving the telephone service. During the past five years several changes have been made through different companies and all have been for faster and better service. When making changes it means new equipment is to be provided and new operating practices are to be adopted from time to time.

In order to put these new practices across to the public, the operators must be trained and have a thorough knowledge of their job. In training our operators they are taught to use certain phrases and codes and also the time allowance for holding circuits.

On January 10 our point-to-point traffic was changed to combined line and recording, or better known as C. L. R., which has increased our speed of service to two and three minutes against our former speed of five to six minutes, and several of our calls are being put up from 45 to 90 seconds, according to the kind filed.

This is the most complete change that has been made, not only for the company alone, but it also means faster and better service for the public; and pleasing the public means more calls, making more revenue for our companies. We have found this to be true in comparing our toll business of last year with that of this year.

The first day of our cut-over 75 per cent of our calls were worked on the C. L. R. method. During the month of January we had 2,600 more calls filed than last January and 92.5 per cent completed against 99 per cent of last year. During the month of February we had 3,600 more calls filed and 92.7 per cent against 90.7 per cent of last year, with seven less operators.

The single-ticket method, which has been used for the past years, is one with which we are all familiar. In this method an operator recorded the call and dismissed the subscriber without asking him if he knew the telephone number. The ticket was then sent to a directory operator for a number even though the inward operator would have been able to furnish it and the number was not given to the subscriber, so that the next time he placed his call it had to go through the same routine. In larger offices the ticket was then taken to the outward operator by an operator called a messenger. In smaller offices the operator did her own recording, but she dismissed the calling party.

Under the C. L. R. method the operator records her own calls, making her familiar with all of the details of the call, so that she is ready to go through with the call at once and if the subscriber does not furnish the called telephone number, the operator asks, "Do you know the telephone number?" If he knows the number he is asked to hold the line. He then understands how his call is handled. Within a minute and sometimes less he is talking to his party.

If he does not know the telephone number and we think that the inward operator will not be able to furnish the number and it is a point to which we do directory work, he is dismissed and we obtain our number from the directory operator over toll information trunks. Then, just before giving him the first report or reporting "ready," we give him the telephone number, hoping he will write it down so that he will be able to furnish the number and can hold the line the next time he calls.

If the call is to a point where we do not do directory work he is asked to hold the line and the call is passed by address, name and the number is either obtained from inward operator or information. The number is then given to the subscriber during the first interval of waiting or just before the first report. He holds the line the same to a non-directory point as when he gives the telephone number, but there is more delay, taking from two to three minutes.

We find by giving out telephone numbers we are getting more station-to-station calls. A station-to-station call does not have to be announced to the called station and the ticket is stamped just as soon as the called station answers, without waiting for a reply, making us able to complete more calls in less time. On a person call the calling party often recognizes the voice of the person answering and starts talking so that the call does not have to be announced.

If we obtain a report from the called station it can be heard by the calling party and he sometimes passes his request to us without having to repeat the report to him, and the called station often hears the calling party talking and acknowledges the order without repeating it. The C. L. R. method has also reduced our leave-word calls to about one-half, which are handled at a point-to-point position. This system not only saves subscribers' time, but also operators' and circuit time.

In summarizing our advantages on combined line and recording we find it has reduced our recording answering time, our completed per cent time from two to four minutes, cancelled calls about one-half and leave-word about one-half, making a 2.5 per cent increase in calls completed, which means increase in revenue. In return we have more satisfied subscribers and less complaints.

It is our aim to complete as many calls as possible in the quickest and best way, which may be done by using the C. L. R. method.

Examining and Instructing New Applicants for Positions.

By Mrs. Minnie Mackin,

Chief Operator, Northern Ohio Telephone Co., Norwalk, Ohio

The public measures telephone service by the impression which the employes make

when they come in contact with them. Equipment may be poor or lines in bad condition and the subscriber will make a complaint to the manager, asking that these conditions be remedied, and wait patiently until the plant department would have sufficient time to act. But this same subscriber will not be patient or accept any excuse for discourtesy from an employe.

We, in the operating department, who are constantly in contact with subscribers, perhaps have more to do with furnishing the service the subscriber gets than any other department, and as our service is judged by the public we must be very careful as to the type of individuals with whom we surround ourselves.

First of all, the chief operator of every office should be thoroughly familiar with modern operating practices and methods employed in an operating room, and then as applicants present themselves for positions she will be able to determine the type of individual that can adapt herself to this training, as not every individual may become an operator any more than any young woman will make a good stenographer or teacher by reason of the choice of a certain profession.

Let us suppose that we have an applicant asking for a position appear at the office. After a few preliminary questions as to age, residence, health, etc., let us ask her a few questions just to see how she will respond. Suppose we ask about her schooling—if she has completed a high school course, well and good; she has by this obtained a sufficient basic education so that we may know that she is capable of understanding all of the preliminary training necessary to become an operator.

It is also well to find out if she has had any previous experience in any other office and the nature of the work she has been doing. You might ask her questions in regard to her family, whether or not she lives at home with her parents and other questions along this line. Then you will in a very few minutes be able to judge the type of individual with whom you are dealing.

Telephone operating today is rapidly becoming recognized as one of the leading professions of the time and the greatest contributing factor to furnishing service is the human element. As the demand becomes greater and the furnishing of service more complicated, we must be more careful than ever in the selection and training of our operators.

We all like to be proud of our organization and hear the compliments that we get from giving efficient service. As each chief operator cannot supervise or give her personal attention to the details of the office she must have an efficiently trained group of assistants so that she may know they will carry on whether she is present in the operating room or not.

We so frequently hear criticisms in regard to night service when a chief operator is absent. Every operating room, whether it has one operator or ten on duty, should always have some one in charge so that they may be held responsible for the service. By analyzing the criticisms and observing the service while you are absent from the room you will soon know who will accept responsibility and also find those best suited to fill the next vacancy.

After careful investigation as to the character, morals and personality of our applicants we must not forget the most important of all—voice. All the time that I am examining an applicant for a position I keep constantly in mind two things: "Would this girl be able to measure up to the standard now maintained by the girls we have in the office?" The other, "How will that voice sound in the subscriber's ear when he hears it over the telephone?"

While we do not use written forms of application in our office, yet I believe this is desirable in offices employing 20 or more girls. It leaves a record by the applicant herself so that you will have this information on file.

It is always well to keep in mind that somebody will have to fill the vacancies as they occur from time to time and that we can only keep building our service to a higher standard by surrounding ourselves with competent, capable individuals who have an ever-apparent desire to succeed and are interested in the success of their company.

The Importance of Giving Accurate Information.

By Anna Lillian Busch,

Information Operator, Portsmouth Home Telephone Co., Portsmouth, Ohio

"More light, more light," in the words of Goethe, is the crying need of humanity today.

Let us bear in mind there is no mechanical invention of modern times that has been more useful to society than the telephone. In 50 years of its existence, telephone lines have been built over thousands of miles, and millions of people have been served.

Telephone lines carry more communications than the total of post office and telegraph service combined. It has been so developed as to revolutionize the business and social life of our country.

One of the marvels of civilization, it has become a commonplace essential in our daily life, an instrument that needs no special training or knowledge by the public, who in turn, merely not ask, but rather demand good service. It is not at all unreasonable, however, to ask for value received.

Because of the enormous growth and expansion of the telephone system, and the tremendous task of supplying the public needs with its use, importance must be given to accurate information. This, we may say, is the foundation of good service, which in the making is a great task, and should be given consideration from all angles.

Knowing that all great achievements require human efforts convinces us what the pioneers of telephony have made possible for the present day. These forethoughts vision our great obligation, and help to emphasize the "Importance of Accurate Information," the topic of this discussion.

Today, people read little more than headlines, but they do not fail to read the traits of service embodied in men's lives. With the popular demand for service increasing, there is a constant demand for an improved quality, for it is typical of an American to desire the best.

Accuracy is a great asset to any system, as well as a fundamental resource. Alexander Graham Bell, the telephone's first trail-blazer, as well as our present day hero, Col. Chas. A. Lindbergh, both attained their respective goals because the most outstanding characteristic in their lives was that of being accurate.

I believe that 95 per cent of the importance of telephony can be placed upon the giving of accurate information of any system upon inquiry. To follow the line of least resistance would only mean to tear down the great structure it has taken so many years to build.

A small stone will break a large jar—this old adage holds some truth for all of us. We may go over big in selling our service, but through carelessness the stone of inaccuracy may shatter our best efforts toward satisfactory service. Unless we meet the public need, what have we gained? Service means giving to people what they need, when they want it.

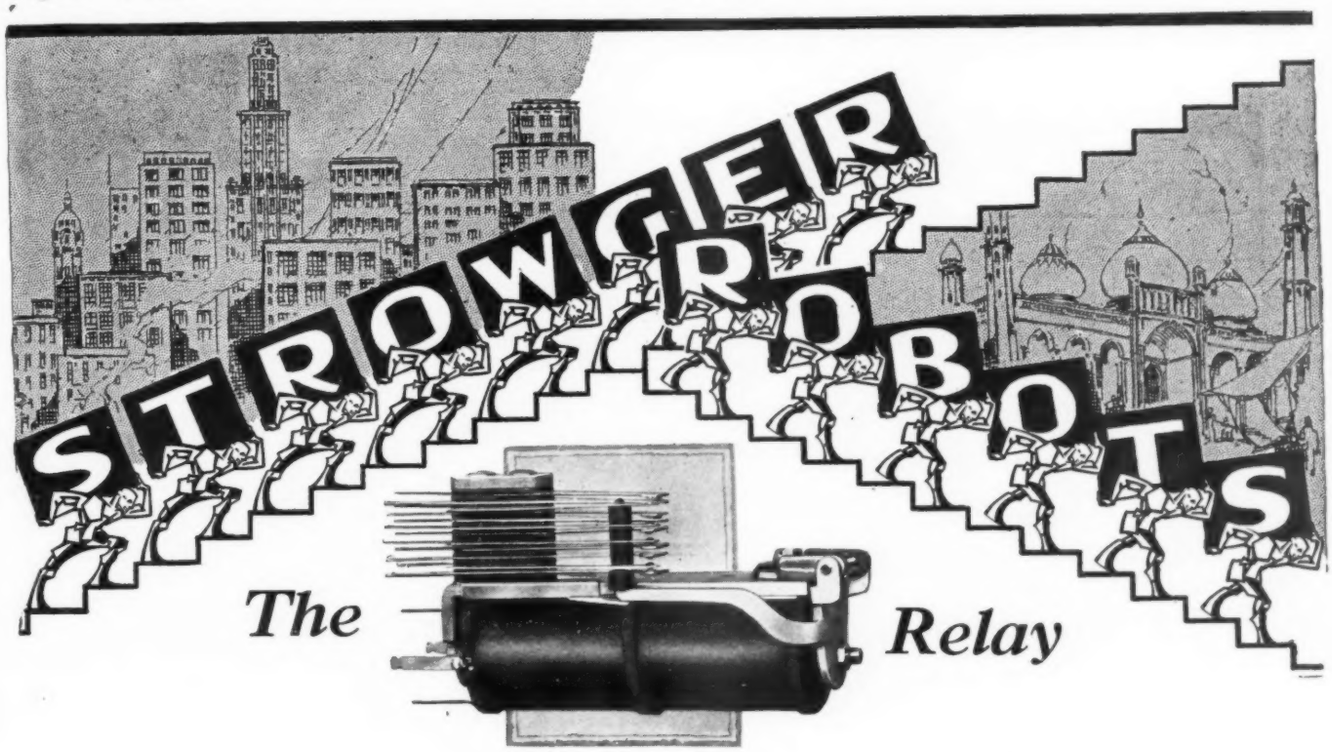
As traffic employes we are instructed to be courteous, accurate and speedy. Do we realize our responsibility to the public?

We should be imbued with a firm determination to give them the best service possible, for satisfactory service enlarges our subscription list and leaves a favorable impression of our system. It inspires confidence in our ability to serve them.

Information is the key that unlocks the doors to the telephone world. She may be known as a human encylcopedia, or merely as a necessity upon which the public depends, a reference work of importance. The one who has the facts has a big advantage over the others, for it is an all important factor to give accurate information.

A mind alert for prompt attention to duty, and the accurate performance of that duty is of vital importance. A loyalty and devotion to one's duty naturally inspires one to give the most reliable information possible.

Ever on the alert for new ideas and more improved methods, concentration and determination, plus ability, a keen memory, and a whole-hearted interest in your work form the characteristics of an efficient worker—one who can exercise a high character of true service.



THE Strowger Relay is the keystone of automatic telephone circuits, enabling circuit changes to be effected instantaneously, and in correct sequence as required for the various switching functions.

The time-constants can be varied over a wide range by means of suitably proportioned solid copper slugs, fitted to the cores, and by adjustments of the air-gaps and operating springs, the latter being assembled in a large variety of combinations to meet the diverse requirements of numerous Strowger circuits.

Automatic Telephone Manufacturing Company, Ltd.
Strowger Works, Milton Road, Liverpool, England

ASSOCIATED COMPANY
International Automatic Telephone Company, Ltd.,
London, England

"STEP BY STEP"

This Installation Did No
The Telephone Compa

STROWGER

Prove In" On Paper--Yet Is More Prosperous Than Ever!

HEN the board of directors of the Redwood Falls Electric Telephone Company of Redwood Falls, Minnesota, were considering Strowger matic operation for their exchange, they found it difficult to reduce xact figures the benefits which they might expect from its adoption. from the one item of elimination of local operators, the advantages use are sometimes hard to visualize by those who are unfamiliar the records of the many Strowger automatic exchanges in operation ghout this and other countries.

commendable foresight, however, the decision was made to adopt wger Automatic operation for Redwood Falls. The records of this ange since its conversion have more than substantiated the most istic prophecies of its success. The telephone company has found the elimination of local operators is only one of the many advantages tomatic operation, and that many other things beside this one item favorably influence the profit statement of an operating company.

ased business, continued expansion, freedom from complaints and rvisory routine, adequate rates due to bettered service and public oval—these are some of the other benefits of Strowger Automatic ation which, while somewhat intangible, nevertheless have a decidedly ible effect in assuring continued success and prosperity for the hone company adopting it.

Automatic Electric Inc.

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AUTOMATIC

As average Americans we make mistakes—but usually have little patience with the one who makes them. Acknowledging our mistakes is halfway to righting the wrong. Often I have experienced righting

Miss Leone Sigler, Operator of the Star Telephone Co., Ashland, Ohio, Who Handled First Transatlantic Call of the Local Company.

a mistake and was usually rewarded by kindness for having done so.

We need only a little courage to educate the public. Accuracy gives satisfaction to both the subscriber and operator. It creates a mutual faith between them and adds good will. Therefore, accuracy is so important that I believe it plays the major part in the drama of the telephone world—its opportunities are many and varied.

We do not hesitate to admit that loss of time, energy, money and ability to serve are usually due to the fact that we have never given much thought to what kind of information we were giving, and have, no doubt, created unfavorable impressions. We cannot blame a subscriber for becoming irritable and displeased generally, if no one in our employ can direct him to the department where he can get a satisfactory reply to his query.

Just where does our trouble exist? Let us study our own situation. It has been said, "He who is false to present duty breaks a thread in the loom and will find the flaw when he may have forgotten the cause." Our present duty is stressing the "Importance of Accurate Information," and trying to remove the cause of future difficulties.

Do we see that our information operators are capable of performing their tasks? Are they mentally alert and courteous? Do they attempt to lessen the percentage of errors, or are they just guessers of numbers? Are they so trained to their tasks that they feel they are a part of the great system? Have we provided them with the best equipment available and records whereby they can give accurate information?

Cooperation is significant, as we can have no well-regulated organization without cooperation of employes. This is our greatest need today everywhere.

There was never a greater demand for sunny, service-giving people in the world as today. What an opportunity rests upon the telephone workers who come in contact daily with thousands, literally, and the whole busy business and social world do really and sincerely appreciate "Service with a Smile."

With all this food for thought does service not offer a challenge to the great task of bringing about a better feeling of good-will among men?

"Thought is deeper than all speech,
Feeling deeper than all thought."

English Municipal System Doubles Subscribers in Five Years.

J. H. Stanhope, engineer-manager of the Jersey States Telephone Department, England, informed the staff at its annual outing that since the Channel Islands service was taken over from the British Post Office in 1923, they had, by instituting a business system of advertising, salesmanship, and service, practically doubled the number of subscribers; actually they were just five short.

In 1923, at the time of change there were only 1,600 subscribers; today there are 3,195 satisfied subscribers, and the tariff was only one-half that of the former English service.

Terminal Equipment Cut Into Service at Huron, S. D.

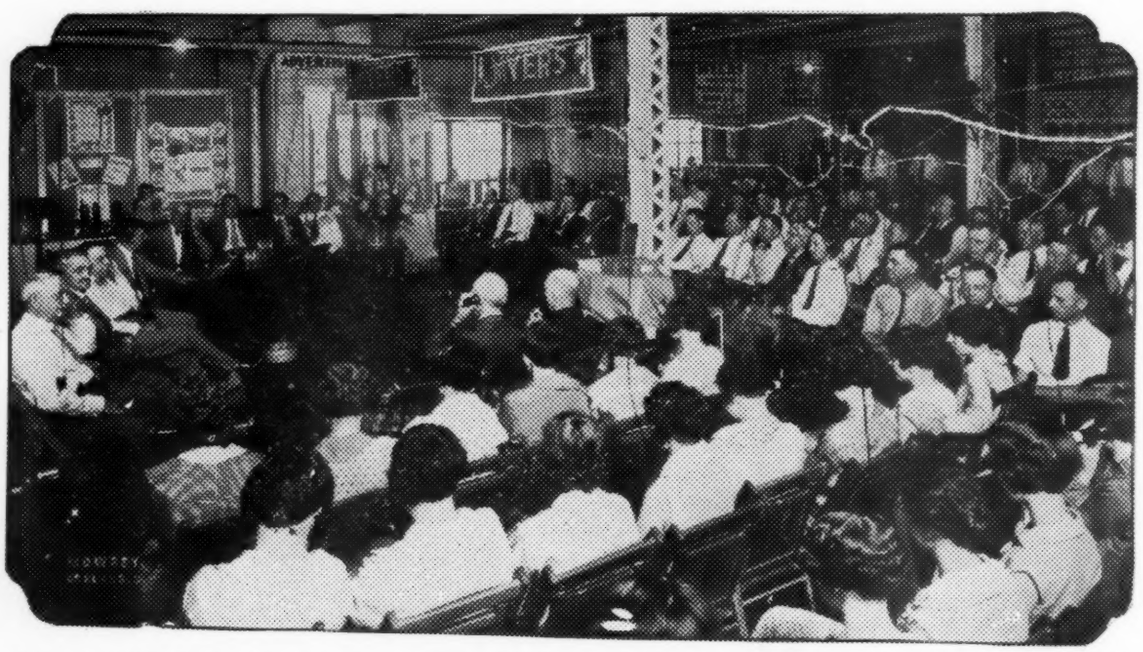
The new $100,000 toll terminal equipment installed at Huron, S. D., by the Dakota Central Telephone Co., was cut into service on the afternoon of July 28, with a break in service of approximately only ten seconds.

The repeater equipment now used consists of cord circuit and through line repeaters for through connections only. The new system is used for terminating as well through connections.

"The installation of the new equipment makes the Huron exchange one of the most complete and up-to-date telephone exchanges in the Northwest," Manager E. J. Calendine declared.

Officials of the Dakota Central company who were present for the cutover included J. F. Zietlow, general superintendent; A. C. Frederickson, commercial superintendent; E. G. Brown, transmission engineer, and S. Nelson, automatic supervisor.

The crew of mechanics who finished their work at Huron are now in Fargo, N. D., installing new repeater equipment and a toll board soon to be in service in the telephone offices there.



Scene in Hall at Opening Session of Annual Sales Conference of F. E. Meyers & Bros. Co., at Ashland, Ohio, When the Company's Vice-President, Guy C. Meyers, Greeted Approximately 140 Members of the Sales and Shop Force Over Telephone from Mayfair Hotel, London England, a Distance of Approximately 4,100 Miles.

Personal Notes from the Field

John H. Wright, of Jamestown, N. Y., vice-president and general manager of the Jamestown Telephone Corp. and head of the associated telephone companies of Jamestown and Meadville, Butler, Ridgway, Johnsonburg and St. Marys, Pa., has been elected president of the Hollow Metal Construction Co. This is a newly-organized company incorporated to manufacture adjustable office partitions.

The new company, which will have its executive offices in Jamestown and its plant at Falconer, N. Y., has a capital stock of $500,000 consisting of 5,000 shares of no par value.

The manufacture of the adjustable metal partitions will be begun within the next few weeks and by October 1 the company will begin delivery of its product.

J. H. Agee, general manager of the Lincoln Telephone & Telegraph Co., Lincoln, Nebr., is a great believer in promoting athletics among the employes of large corporations, and with the revival of lawn tennis in popularity has offered a 14-inch silver trophy cup. It is engraved with a model of a tennis player in action and inscribed "J. H. Agee Annual Tennis Trophy." This is for male employes, and play has already been started.

Each year hereafter the tournament play begins July 15. All male employes may enter. Matches may be played on any tennis court agreed on by the contestants, and with a referee present. Two out of three sets win, but in the finals the winner must win three. Joe Hartley, Dewey Nelson and L. M. Campbell are members of the committee in charge. The four semi-finalists of the yearly preliminary tournament shall be seeded players in each championship tournament.

To secure possession the cup must be won three times, and until that happens the cup passes from player to player and exchange to exchange, with each winner's name engraved on it. The Lincoln exchange recently staged a girl's tennis tournament, which was won by Miss Nellie Erickson of the accounting department.

The Lincoln exchange's basketball team won the industrial league tournament last winter, and its baseball team is just about to take to itself the industrial league championship, having a safe lead over all competitors in Lincoln.

Miss Faye Pugh, of the traffic department of the Oklahoma Telephone Co., at Hominy, Okla., has been transferred to Ramona, Okla., as manager and chief operator.

F. L. Schuyler, district traffic chief at Sioux City, Iowa, for the Northwestern Bell Telephone Co., which not long ago took over the rival company there, has been made traffic superintendent for the Western Electric Telephone System at Mason City. He has been succeeded at Sioux City by **J. H. Kremers,** force adjustment supervisor at Des Moines, Iowa.

John F. Greenawalt, publicity manager of the Mountain States Telephone & Telegraph Co., Denver, Colo., has been promoted to the position of assistant to the president. He is succeeded by Milton E. Bernet, of St. Louis, former publicity manager of the Southwestern Bell Telephone Co., and more recently publicity manager of the Wabash Railroad Co.

Mr. Greenawalt has been closely identified with the executive department of the telephone company for a number of years and enjoys an intimate relationship with the public in general throughout the Mountain States territory, embracing the seven mountain states from Canada to Mexico.

Some 30 years ago Mr. Greenawalt went to Colorado from Cassopolis, Mich., where he had "taught the young ideas how to shoot," as they gathered around him in the little red schoolhouse "set back in the woods." Arriving in Colorado he purchased the Florence Daily Tribune. As an outstanding state editor he became identified with public movements for the advancement of enterprises tending to benefit the state. He sold the Florence Tribune in 1904 and entered the employ of the telephone company, holding the position of special agent at Colorado Springs, Denver, Helena and Salt Lake City, becoming publicity manager for the company in 1911.

Mr. Greenawalt is active in civic life, having served Kiwanis as president of the Denver club and governor of the Colorado-Wyoming district. At various times he served as director of the Denver Chamber of Commerce; was president of the Denver Advertising Club two terms; was district chairman of the Eleventh District of Associated Advertising Clubs of the World one term; is prominent in service club activities and fraternal lodge work.

As a personal representative of President F. H. Reid of the Mountain States Telephone & Telegraph Co., Mr. Greenawalt will not be removed from the functions of civic activities that have been a great part of his business life during the past years.

Mark T. Caster, Lincoln, Nebr., plant superintendent of the Lincoln Telephone & Telegraph Co., has been honored by being selected as head of the Nebraska division of the Broadway of America highway. This road is to eventually be a part paved and part graveled highway running from Winnipeg across the United States, Central America and as far into South America as it is possible to penetrate.

Mr. Caster's job is to line up sentiment for and interest in the project, which will be, so far as Nebraska is concerned, the linking up of the best north and south highways, the road entering the state south of Beatrice and leaving it over the Missouri river bridge into Yankton.

Frank E. Bohn, president and general manager of the Home Telephone & Telegraph Co., Fort Wayne, Ind., with Mrs. Bohn and their daughter Virginia, are enjoying a Western trip. It includes the Yellowstone National Park with some time spent at Eaton's, a "dude" ranch at Sheridan, Wyo.

M. L. Golladay of Holden, Mo., for 28 years manager of the Central Missouri Home Telephone Co. and since June, 1926, general manager of both the Central Missouri Home Telephone Co., Warrensburg, Mo., and the Middle States Utilities Co., has resigned his position with the Central Missouri company. His resignation was announced at a picnic for employes of the company at Electric Springs.

Mr. Golladay stated that he would probably remain as general manager of the Middle States Utilities Co.

Clark Silvey, well-known resident of Jefferson City, Mo., has been appointed superintendent of the Capital City Telephone Co. to succeed Don A. Daso, who has resigned to accept the district managership of a group of Illinois companies.

Mr. Silvey has been connected with the Capital City company for the last 12 years and is regarded as one of the best informed telephone experts in his section of the state.

Obituary.

Hans Arvig, owner of the Nevis Telephone Co., Nevis, Minn., was electrocuted July 30, while stringing new wires. One of the wires fell across a high tension line of the Minnesota Power & Light Co. and 32,000 volts passed through his body.

Mr. Arvig fell 25 feet to the ground and was dead when picked up. He had owned the Nevis exchange only seven months.

Col. Frederick M. Woods, father of Frank H. Woods, head of the Lincoln Telephone & Telegraph Co., Lincoln, Nebr., and a prominent figure in other telephone enterprises, died of a heart attack on July 31, while at the summer home of the Woods families on Madeline island, in Lake Superior, near Bayfield, Wis.

Col. Woods was a Nebraska pioneer, with an honorable record as a soldier. Although he retired from actual business a number of years ago, he was a nationally known figure in the live stock industry. He was given a degree by the Nebraska College of Agriculture some years ago for services to that industry.

Telephone on the American Railroad

Growth in This Class of Service, Slow at First, Has Been so Great That Practically no Railroad in the United States Is Without Telephonic Train Dispatching—Physical Layout of Modern Circuit—Various Good Results

By G. L. Miller, E. E.

Telegraph Department of C. C. C. & St. L. Ry.

The average man associated with a commercial telephone company probably is unaware of the very rapid growth in the use of the telephone on our great railway systems which has been made in the last two decades. That so extensive and closely knit a long distance telephone system could have sprung up and commenced operation in his very midst he probably cannot understand, unless as an official of a telephone company he has come in contact with the problem through contract agreements between his company and the railroads.

The years 1908 and 1909 were marked by a sudden awakening on the part of certain railroad operating officials to the possibilities of the use of telephony in train operation. In addition to the usual opposition which springs up against any new idea, there appeared the quite natural objections of Morse operators and telegraph people of all kinds who claimed that the idea was not only unsound but positively dangerous.

Aside from a really sincere belief that the use of the telephone for dispatching trains was not feasible, these people were able to draw upon their imaginations and picture the rapid disappearance of their jobs with the imagined disappearance of the telegraph from railroad operation.

Early Success.

A few railroads advanced somewhat cautiously into the experimental installation of a telephone dispatching circuit over a single operating division. These same railroads were, it appears, somewhat taken back at the success of their experiment and proceeded to broadcast the news of their new development. Other railroads, somewhat more conservative, but open to conviction, sent representatives to investigate the existing installations, and then proceeded into installations of their own.

The growth in this class of service has been so great that now practically no railroad in the United States is entirely dependent upon telegraphic train dispatching.

Under present congested conditions, telephonic train dispatching would be practically impossible were it not for the development of methods of calling selectively a given telephone or office on a division. In Morse operation this is effected by assigning each office a letter call by which any one of the offices may be called in on the circuit. To carry over this scheme into telephone operation would not be feasible, because in so doing a condition would be had similar to a rural telephone line with 40 or 50 stations on it, each of which would have to be called in by code ringing. Any telephone man can appreciate the chaos which would result.

Briefly, the physical layout of the usual modern dispatcher's telephone circuit is as follows: A pair of wires is strung over each railroad operating division. At some point on this circuit, usually at one end, the dispatcher's office is located. The dispatcher is provided with a telephone which is permanently connected to the circuit and which is located at an operating table or desk on which the dispatcher can maintain his train sheet.

Description of Telephone.

This telephone, instead of being provided with a regular hand receiver, is equipped with a telephone operator's head set, and in some cases is supplemented with an amplifier and loudspeaker so that the dispatcher need not wear the receiver on his head. The dispatcher has also mounted within convenient reaching idstance on his desk a cabinet containing a set of selective ringing keys. By the operation of any one of these keys he is able to ring the bell at any station through the operation of a selector located at that point.

At each way station on the division with which the dispatcher may wish to communicate concerning train operation is installed a local battery telephone and telephone selector. This telephone is usually not of the ordinary farmer-line type but has a specially-designed circuit to permit of a very high level of outgoing transmission. The selector is set for a particular combination of impulses which are sent out on the line through the operation of one of the ringing keys mentioned above. The dispatcher thus has at his finger tips the means for calling any station that he may desire, or, successively, as many as he may desire.

Telephones Without Selectors.

In addition to the selector-equipped telephones there may be several installations consisting of telephones alone without selectors and located in pole boxes or booths at certain strategic points along the right-of-way, particularly at switches and siding tracks. These are highly necessary for the use of trainmen, particularly those in charge of long freight trains, in ascertaining the desires of the dispatcher regarding the train movements.

These telephones, being located at outlying points, are not equipped with selectors and, therefore, cannot be called by the dispatcher but may themselves call the dispatcher merely by talking on the circuit. This, in fact, is the method used in establishing communication with the dispatcher from any telephone on the circuit since he is always listening on the circuit either with his head-set or with the loudspeaker.

The large number of train crews, construction gangs, section gangs, and others engaged in some form of work on or along the tracks necessitates the use of a large number of portable telephones and has naturally resulted in some rather special developments in this field alone.

Engineers of some of the larger electrical manufacturing companies are now engaged in special development work in an effort to provide the railroads with a good reliable type of portable telephone which will contain most of the transmission characteristics of the high efficiency way station telephone. This is highly essential, as the sets are quite often called upon to perform under conditions which are rather adverse from a transmission standpoint.

Development of Other Uses.

The successful adaptation of the telephone to train dispatching revealed several other uses which had not formerly been apparent. For example, the question of handling the large amount of business originating at way stations and destined for other stations or terminal points is an important one. The question of keeping in close touch with the movements of freight cars over a division is an important one. Other needs special to railroad operation could be enumerated, all of which taken together would account for the development of a second type of telephone circuit for use on the railroad, namely, the "message circuit."

The term "message circuit" is probably a misnomer in most cases because, generally speaking, as at present designed and operated, it is really a long distance intercommunicating circuit. The circuit in its purest form derives its name from the fact that in some cases it actually is used for the transmission of messages. An employe known as a message operator is located at some point on the circuit under conditions and in surroundings which make his position somewhat analagous to that of a train dispatcher.

The entire time of the message operator, however, is given to the copying and handling of messages with the operators at the way stations. As a matter of fact, this is a use to which a message circuit is seldom

What Better Investment For Telephone Men Than Telephone Bonds and Preferred Stocks?

We are pleased to offer the following representative Independent Telephone Securities which, in our opinion, afford substantial security and attractive income.

The Companies listed below are noted for consistent earning records and dividend payments—sound management—proper maintenance—and adequate charges to depreciation.

MANAGEMENT		PRICE	YIELD
	FIRST MORTGAGE BONDS		
H. E. Hageman	The Lorain Telephone Company 1st 5%—1958 - - - Serving City of Lorain, Ohio, and surrounding territory. Earnings twice interest requirements after depreciation and Federal Taxes. Loan 47% of property valuation. Plant largely automatic. Service mainly underground.	100	5.00%
J. Y. Rust	The San Angelo Telephone Company 1st 5%—1958 - - - Serving City of San Angelo, Texas and surrounding territory. Earnings 3½ times interest requirements after depreciation and Federal Taxes. Loan 58% of property valuation—Plant newly installed automatic. *Southwestern Bell Telephone Company own approximately 40% of Common Stock.*	100	5.00%
Frank Knapp	Northern Ohio Telephone Company 1st 5½%—1957 - - - Serving important communities in Northern Ohio. Earnings 2.1 times interest requirements after depreciation and Federal Taxes. Loan 39% physical valuation.	103	5.30%
	DEBENTURE BONDS		
Theodore L. Gary & Company	Diversified Investments, Incorporated 30 Year 5%—1958 - - (Theodore L. Gary Group American Properties), including Fort Wayne, Terre Haute, Indiana; Bloomington, Streator, Illinois; and companies serving over 130,000 subscriber stations. Issued to retire Bonds and Preferred Stocks of operating companies. Earnings 2½ times bond interest after depreciation and Federal Taxes and over 6 times before such deductions. Bonds outstanding at only $50 per station.	95	5.33%
	PREFERRED STOCKS		
Theodore L. Gary & Company	Diversified Investments, Incorporated 1st 7% Cumulative Preferred. Dividends earned over 2 times after all charges including bond interest, depreciation and Federal Income Taxes. Total assets of the Corporation and its controlled companies as of Dec. 31, 1927, totalled $22,730,131. After deducting prior obligations, the balance $11,958,326 represents an equity equivalent to over 4½ times outstanding par value First Preferred Stock. Dividends payable quarterly, January, April, July and October 15th. Redeemable at 115 and dividend. Dividends exempt from present Normal Federal Income Tax.	105½	6.65%

We shall be glad to forward complete data regarding these issues upon request.

Orders may be phoned or wired at our expense.

R. F. DEVOE & COMPANY, INC.

120 Broadway

New York City, New York

TELEPHONE RECTOR 7280

put, although some railroads are actually operating circuits in this manner.

Physically, a message circuit is almost exactly like a dispatcher's circuit, except that both ends of the former are usually terminated in a switchboard for connection to other local and long distance circuits. In general, all way stations having telephones and selectors on the dispatcher's circuit also have similar equipment on the message circuit, dependent of course upon each station's local needs.

The switchboard at one end of the circuit is equipped with a ring-down drop, while the switchboard at the distant end is usually made a selector station. Any station on the line can call the first switchboard by a hand generator. If this station desires another station also having a telephone connected to the circuit, the switchboard operator at the control end can call that station by means of her selective ringing equipment. Thus any two stations on the circuit can establish communication with each other through the assistance of the controlling switchboard operator.

In addition to these features, each one of the switchboards is equipped with special toll or universal cord circuits which will permit the connection of the message circuit to any other circuit, either local or toll, which may terminate in that board. It is apparent, therefore, that a message circuit, as most generally operated, partakes of certain of the features of both a toll circuit and an inter-communicating party line. The selective ringing feature removes most of the disadvantages which would ordinarily accrue to such an arrangement.

A third and very important type of circuit, the use for which is growing every day, is the private toll or long distance circuit which connects two or more widely separated railroad switchboards. This type of circuit is practically identical in every respect with the same type operated by the commercial telephone companies.

An interesting point in this connection is that where only a single circuit of this kind exists between two given points, it usually consists of a phantom circuit derived from the message and dispatcher's circuits used as side circuits. Where the traffic is too heavy for a single long distance circuit, other circuits are engineered and constructed upon the same bases used by the commercial companies.

The switchboards mentioned are usually private branch exchange boards of the local commercial telephone company in each given locality. The message and long distance circuits terminate in these boards for connection to any P. B. X. terminal in the boards as well as to other message and long distance circuits. In addition to this service, operating agreements have made possible the connection of any city telephone to a railroad long distance circuit over regular telephone company main line and central office trunks. The flexibility of such a system is of almost incalculable advantage to the executive staff of a railroad.

Several railway companies have found it feasible and economical to extend their private long distance service through the lease of cord circuit telephone repeaters from the American Telephone & Telegraph Co. By locating one or more of these at certain master switching points on the railroad telephone system, a rather comprehensive long distance communication plant is made possible.

It has been very interesting to note the extensive use which has been accorded private railroad toll lines after they have once been thrown into service. Their construction is based, of course, on a traffic study made of the area and on a study of the commercial tolls paid over a given period for service between the two points involved. Needless to say, the annual carrying charges on a circuit also form a very important basis for a study of proposed construction.

Experience has shown that the usual result of the construction of a new toll circuit it to cause a very great jump in the private toll traffic in that area. This increase in traffic has often been so great as effectively to pay for a large portion of the first cost of the circuit during its first year of use, assuming the usual commercial toll rates for each call.

The net results of the application of the telephone to railroad communications have been an increase in speed, an increase in flexibility and a more generally satisfactory mode of carrying on railroad business than that provided by the telegraph alone. These results are naturally reflected in a much faster movement of cars, both passenger and freight, a point which is of vital interest to the traveling and shipping public.

Irrigation Reservoir Causes Moving of Transcontinental Line.

The great reservoir which is being built in Utah on the route of the Lincoln Highway at the junction of the Weber and the famous Echo canyons, and which, when in operation, is to supply irrigation water to a number of Utah counties, has necessitated the rerouting of about four miles of the central transcontinental telephone line, as the line followed the old highway route. The rerouting of this piece of line has proved anything but a simple matter to telephone engineers.

It was necessary to route the new line high up on the mountain sides nearly all the way. Due to the ruggedness of the country, with its deep hollows and high cliffs, one of the difficult engineering problems of laying out the line was the location of poles. A great number of the poles had to be set in solid rock.

The rock formation in the locality was such that it was most difficult to blast, and in several places where the drillers worked it was necessary for them to rope themselves to trees and rocks because of the slippery condition of the hillsides.

It also was necessary to reroute approximately five miles of the Lincoln Highway and about the same distance of the Union Pacific Railroad tracks so as to avoid the reservoir.

Developments Seen in New Companies Organized by I. T. & T.

Another company has been incorporated under New York state laws by the International Telephone & Telegraph Corp. It is the International Radio Corp. and brings the number of new companies organized to three. The International Cables Corp. and International Communications Corp. are the other companies.

The capital of the three companies is $10,000 each, consisting of 100 shares of $100 par value stock of the same class. The principal office of each company will be located in New York and the duration of the corporations is perpetual.

There are five directors, serving on all three corporations, and all five are employes of the International Telephone & Telegraph Corp. These directors are Samuel G. Ordway, with 40 shares of stock in each company; Howard L. Kern and Franklin Hutchinson, with 30 shares each. Other directors, who have been named to serve until the first annual meeting of the stockholders, are William H. Freng and David W. Peck.

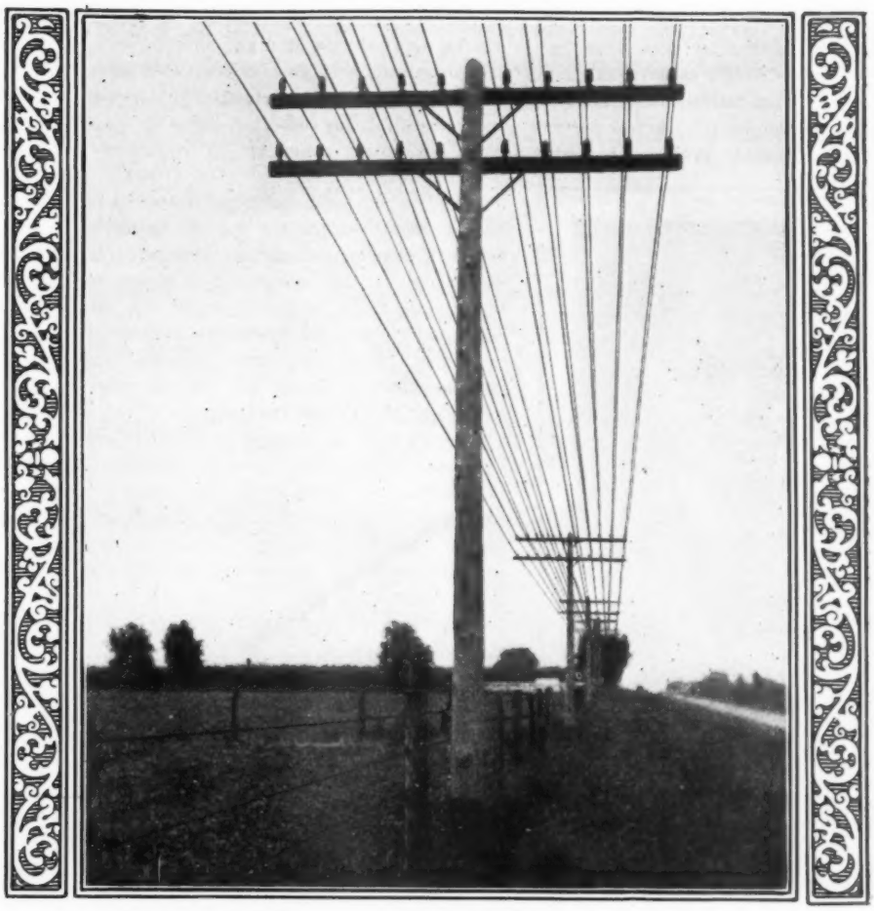
Although no official statement has been made by the International Telephone & Telegraph Corp., it has been definitely learned that the companies formed were not organized merely to protect the name "international" in connection with the cable, radio and communications business, but that they are the forerunners of important developments in the International system.

Although the present capitalization of the three companies is small, it can be increased by filing amendments to the certificates of incorporation at Albany, N. Y. In the meanwhile, the corporate existence of the three organizations can begin, and the very broad powers they have received is believed to justify the assumption that important developments are close at hand.

The nature of these developments will not be disclosed until the plans of the International system have reached the stage where they can be revealed without hindrance to any of the steps proposed. In the opinion of Wall Street, the segregation of existing properties and the creation or acquisition of new properties is envisaged by the parent company.

The manufacturing branch of the Internationals activities is already vested, to a very great degree, in the International Standard Electric Corp., which has subsidiaries in many foreign lands. The cable, radio, telephone and broadcasting subsidiaries, many of which are in countries lying to the south of the United States, present a more complicated set-up.

Exceptional Shipping Service on "P&H" Poles



"P&H" Butt-Treated Poles in lines of Empire Telephone Co., Bradford, Ill.

P&H

PROMPT shipment and effective tracing are rigid rules of "P&H" Service. The result is unusual success in getting poles to destination promptly.

For instance:— A shipment of "P&H" Poles to Flushing, Long Island, New York arrived there exactly eleven days after the order was handed to our salesman. This is typical of "P&H" Shipping Service.

All cedar pole needs in stock—Northern White Cedar or Western Red Cedar. For longest life poles, lower per-annum cost lines, investigate "P&H PROCESS" Poles—guaranteed, in writing, to show a full sapwood penetration of the preservative to a depth of one-half inch.

"Still in the Lead"

PAGE AND HILL CO.

MINNEAPOLIS, MINN.

New York, N.Y., 50 Church St. Chicago, Ill., 19 So. La Salle St. Dayton, Ohio, 854 Reibold Bldg.
Kansas City, Mo., 517 Pioneer Trust Bldg. Omaha, Neb., 734 Electric Bldg.

Modernizing of Small Kansas Exchange

Up-to-Date Magneto Exchange Equipment Recently Installed for Central Kansas Telephone Co., Wakeeney, Kans.—Some of the Features of the Two-Position, Low-Type Kellogg Switchboard Described to Open House Visitors

By H. N. Faris,

Technical Engineer, Central Kansas Telephone Co., Abilene, Kans.

In recent years there has been much talk relative to improved equipment enabling operators to handle larger loads and at the same time give better service in common battery exchanges. It should not be overlooked that similar progress is being made by the more progressive manufacturers and operating companies in magneto exchanges.

John Herdt, the Efficient Manager of the Local Exchange of the Central Kansas Telephone Co. at Wakeeney, Kans.

An installation that is the last word in magneto exchanges was just completed at Wakeeney, Kans., by the Central Kansas Telephone Co. Open house was held for some 650 Trego county people and telephone men from surrounding towns.

The many new and unique features of the switchboard were described to them. For instance, the operator no longer has to constantly observe the entire face of the switchboard to avoid missing calls. With the new system a white "pilot lamp" lights directly in front of the operator whenever call comes in, and it remains lighted until the call is answered. Should two calls come in together, causing a single buzz, the operator cannot overlook the second call, because the pilot lamp will not go out until it has been answered.

The pilot lamp also serves as a constant check on the night alarm system, for so long as the pilot lamps operate properly in the day time, the night alarm equipment can be depended on at night.

An up-to-date ringing system does away with the noise and confusion of buzzers and substitutes an indicator lamp to show when lines being called are in trouble and how severely.

Chest type, loud-speaking transmitters have been substituted for the old swinging type. The new transmitters follow every movement of the operator and keep the mouthpiece close to her lips so she can speak quietly and not interefere with other operators. New and extra sensitive receivers make it easier for the operators to get called numbers correctly.

Ringing keys on the new equipment have been entirely separated from the operator's talking key to reduce the possibility of ringing a patron in the ear.

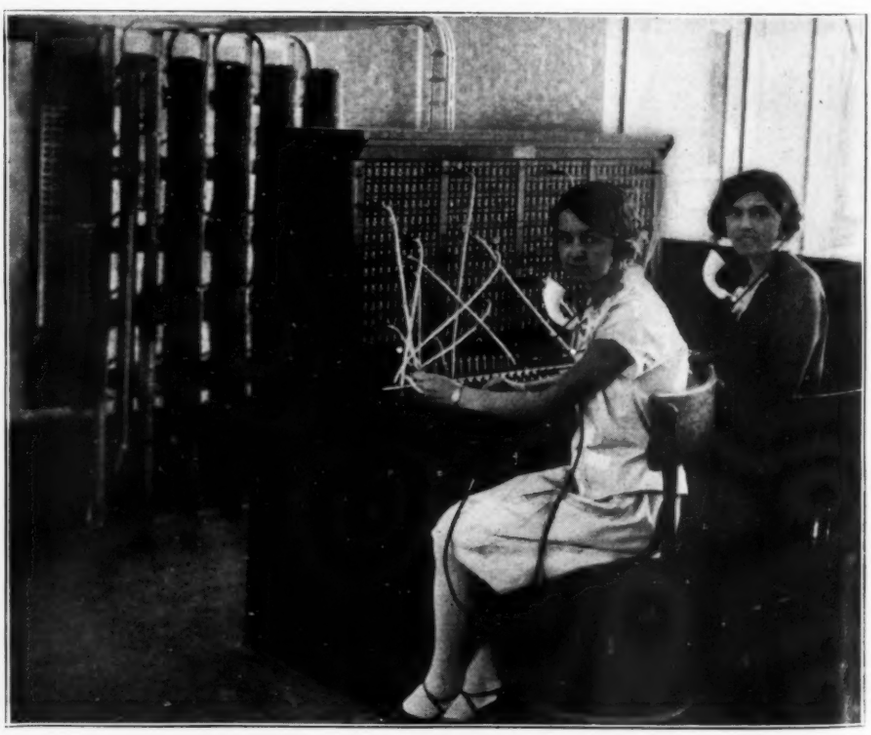
The cord circuits, which really constitute the switching equipment, are of the latest improved type. They enable each talking party to ring off separately and without "ringing through" and disturbing the bell of the connected party. This is accomplished by using the "inductive coupling" system instead of tying the lines together, directly or through condensers.

If one of the parties desires to "recall" the operator, instead of ringing off, it is only necessary to give a half-turn of the generator crank instead of the usual three turns.

In addition to the supervisory lamps associated with each cord pair, the operator also has a large red pilot lamp which remains lighted so long as any disconnect or recall signals remain uncared for. With proper attention on the part of patrons to always "ring off" and recall correctly, the operation of the new switchboard becomes principally a matter of "keeping the lights out."

Magneto switchboards in the past were built to limit the line circuit space to 150 or 160 lines per position. With the modern improvements of line and supervisory pilots and the lamp signal key-shelf supervision, this limit has long been ridiculously low for local positions serving individual lines.

The more progressive of the telephone companies have long insisted on 200 lines per position, through the use of ten per strip equipment. They also desired facilities whereby the rural lines could be distributed in front of the local positions,



View of the Kellogg Two-Position Switchboard Recently Installed at Wakeeney, Kans., by the Central Kansas Telephone Co.

LYON

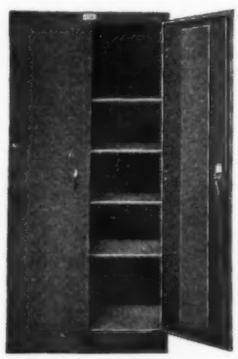
THE Double-Face Cord Rack may be furnished with or without double swinging doors. Each section has ten 11-inch arms, set twelve inches apart. These sections are seven feet high and occupy just a little over one square yard of floor space. Durably enameled in green.

The Transmitter Horn Box, with two compartments, has a strong, hinged cover with handle. Capacity about three cubic feet.

Tu-dor is a Lyon Steel Cabinet typical of a line especially well adapted to use for office storage in the telephone industry. Other cabinets and many other pieces of special telephone storage equipment are illustrated and described in Bulletin 314-A.

Lyon Steel Storage Equipment is noted as meeting every storage need, so whatever your requirement, send today for Bulletin 314-A.

LYON METAL PRODUCTS, INCORPORATED
AURORA, ILLINOIS
Successor to
DURAND STEEL LOCKER CO. *Chicago Heights, Ill.*
LYON METALLIC MFG. CO. *Aurora, Ill.*



TU-DOR CABINET

DOUBLE-FACE CORD RACK

TRANSMITTER HORN BOX

STEEL STORAGE EQUIPMENT

LYON STEEL PRODUCTS

Steel Shelving . Lockers . Cabinets . Counters . Steelart Folding Tables and Chairs . General Steel Storage Equipment and Steel Furniture . The Lyon name and trade mark attest the strength, finish, usefulness and durability of Lyon Steel Products

When writing to Lyon Metal Products, Inc., please mention TELEPHONY.

thereby more nearly completing an operator's load.

The switchboard installed at Wakeeney was designed by the Kellogg Switchboard & Supply Co. to meet the present demand for this improved service. It is of the two-position, low type, arranged with four panels of ten per strip equipment to afford 400 local lines, with an 11th row for 40 toll, rural and miscellaneous lines. It can be appreciated that this system has all the advantages of the low type switchboard with the regular decimal numbering of common battery practice, while the 11th row for toll, rural and miscellaneous lines corresponds to the space below the multiple shelf in common battery equipment.

In the future, should the Central Kansas Telephone Co. find it necessary to add a third and fourth position, it can be furnished in the single or double-position section with standard jack and relay ending transfers. The jack end of such transfers is properly located and designated in the miscellaneous space, while the plug grouping, above referred to, makes it unnecessary to place the transfer plugs in a third row as per former practice.

With one position devoted to toll and with the 100-line "overhang" allowed in the toll position from two local and rural positions, a 550-line equipment with a possible "forced capacity" of 660 lines is afforded in a low cabinet and involving practically no transfers except those used for toll trunk purposes.

In like manner, a four-position, 880-line low-down equipment extends the possibility of this high class magneto switchboard well into the realm of common battery. If the company desires to continue this large plant as magneto until the proper time for rebuilding and converting to common battery, it can do so with this high class magneto equipment. This equipment will afford better service and operating economies. It will transfer into another magneto plant or find a ready sale, if offered to neighboring exchanges using old-style magneto equipment.

The new equipment is located on the ground floor of the building recently purchased by the telephone company. The remodeling of this building for telephone purposes was planned by General Superintendent J. E. Flint and Ralph Van Trine, of Abilene.

The work on the exchange building was done by a local force under the supervision of J. H. Fargo, building superintendent for the company.

Recabling work was done by W. C. Wilking, construction superintendent, and the cable splicing by W. H. Long, who also installed the switchboard under the supervision of H. N. Faris, technical engineer.

The local plant is ably managed by John Hardt of Wakeeney.

With the Manufacturers and Jobbers

The Highway Earth-Boring Machine and Pole Setter.

The exceptional angles which a Highway earthboring machine can be operated, as illustrated, is a feature that makes the machine feasible for all kinds of work, not only for setting poles but for digging anchor holes.

Highway Earth-Boring Machine Digging Anchor Hole at an Angle.

Among the important features are ample power and speed, flexibility, operating ease and safety provided in the tractor-type machine so equipped. It is said to operate in ditches, over hollows, embankments, reaches and digs, as well as sets the pole, in any kinds of soil and all kinds of weather.

An average of a pole in the ground every 5½ minutes is the record recently established by the Highway earth-boring machine and pole setter in actual construction work.

More detailed information regarding this machine may be obtained by plant maintenance and construction men, or others who may be interested, by writing the manufacturer, Highway Trailer Co., Edgerton, Wis.

Increased Use of Creosoted Pine Poles in 1927.

Pressure creosoted southern pine poles again showed a greatly increased demand in 1927, according to figures just released by the U. S. Forest Service, prepared in cooperation with the American Wood-Preservers' Association. Pine poles treated in 1927 almost equaled the total number of poles of all other species treated in that year.

Distributors and users of these poles claim this big demand is due to their great strength and their longevity when given a full length pressure treatment with coal-tar creosote.

The past ten years has seen an increase of almost 2,500 per cent in the number of southern pine poles treated. The almost steady yearly increase during that time is shown by the following figures:

1918	67,541	1923	451,852
1919	156,346	1924	899,201
1920	167,289	1925	780,248
1921	224,777	1926	925,929
1922	291,991	1927	1,738,839

New Toll Board for Carolina Company at Kinston, N. C.

The Carolina Telephone & Telegraph Co. with headquarters at Tarboro, N. C., operates numerous exchanges in North Carolina and Virginia. Anxious to serve its subscribers with big quality long distance service, as well as local service, it has placed an order with the Stromberg-Carlson Telephone Mfg. Co. for a new four-position toll board to be located at Kinston, N. C.

Fine Booklet on Cedar Poles Issued Recently.

"Poles of Cedar" is the title of a very attractive and educational booklet issued recently by MacGillis & Gibbs Co. of Milwaukee, Wis., dedicated, as stated on

You can depend on

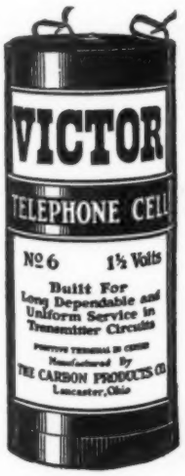
VAC-Ms

Protection from lightning, high voltage and sneak currents is but a simple and economical matter with VAC-M arresters. No telephone exchange should be without them. No investment could pay greater dividends.

Their timely installation protects operators, property, service and the telephone manager's peace of mind.

There is an immediate shipment of VAC-Ms awaiting your order.

THE NATIONAL ELECTRIC SPECIALTY CO.
Toledo, Ohio



VICTOR TELEPHONE CELLS

Uniform quality assures to you a lower average in replacement cost

The Carbon Products Co.
LANCASTER, OHIO
11 South La Salle Street, Chicago

Cope Specialties

- Conduit Cleaning Tools
- Concrete Cutters
- Cable Racks
- Cable Rack Arms
- Cable Reel Jacks
- Cable Drawing Guides
- Cable Drawing Protectors
- Cable Duct Shields
- Cable Pulling Rope
- Guard Rails

COPE Quick Coupling Conduit Rod is outstanding for its many salient features. It is designed for strength, durability and quick installation. They will not come uncoupled in the duct.

Send for copy of our new catalog.

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Manufacturers of
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2112-14 Sansom Street, Philadelphia, Pa.
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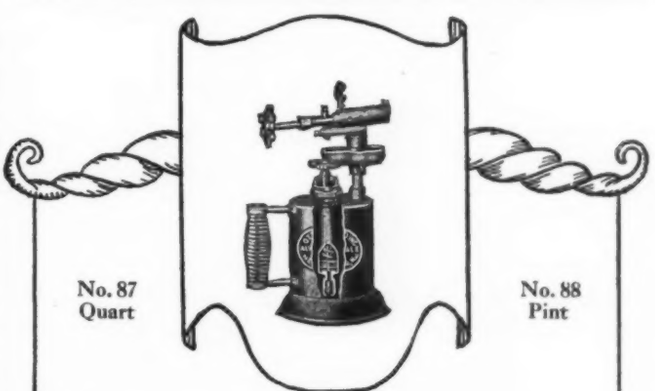

No. 87 Quart

No. 88 Pint

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Three generations have looked to the "ALWAYS RELIABLE" line for the best in practical torches and furnaces. They are backed by over 50 years of experience, and are protected by patents.

Your men surely can do quicker and better work by using such dependable torches and furnaces as these.

Order through your regular distributor, or mail your order to us with their name.

OTTO BERNZ CO. INC. NEWARK, N. J.

Stocks in Newark, N. J., New York City, Chicago, and San Francisco.

Offices in Newark, N. J., New York City, Chicago, Fort Worth, Denver, Helena, Mont., San Francisco, Los Angeles, Seattle, and St. Thomas, Ont.

Mentioning TELEPHONY gives your inquiry tone.

page 1, "To the users of poles, this book is issued to furnish accurate and complete information on the preparation, preservation and distribution of cedar poles."

The booklet consists of 47 pages containing a complete yet concise description of the structure of cedar, its adaptability as pole timber and the theory of impregnation, explaining in detail the best processes of butt treatment to be used for ultimate good results in the line. This is supplemented by specifications, tables and formulae, to assist in computing the various requirements of line construction.

Excellent illustrations accompany the various topics, among which are; timber preservation and forest conservation; anatomical structure of cedar; sapwood and heartwood; weathering and decay; theory of the impregnation of cedar; MacGillis' penetration process poles; the economy of treated timber, and many others.

Copies of "Poles of Cedar" may be secured upon application to the MacGillis & Gibbs Co., 1201 Wells Building, Milwaukee, Wis.

Interesting Small Booklet Issued by Texas Creosoting Co.

A miniature book of five chapters and 24 pages is that entitled, "The Autobiography of a 'Black Beauty' Pole; a Tale of a Tree That Made a Name for Itself." The paper cover is an excellently printed imitation of a black and red cloth binding which impels one to turn immediately to the opening chapter entitled, "Leaving the Woods," which begins with this paragraph:

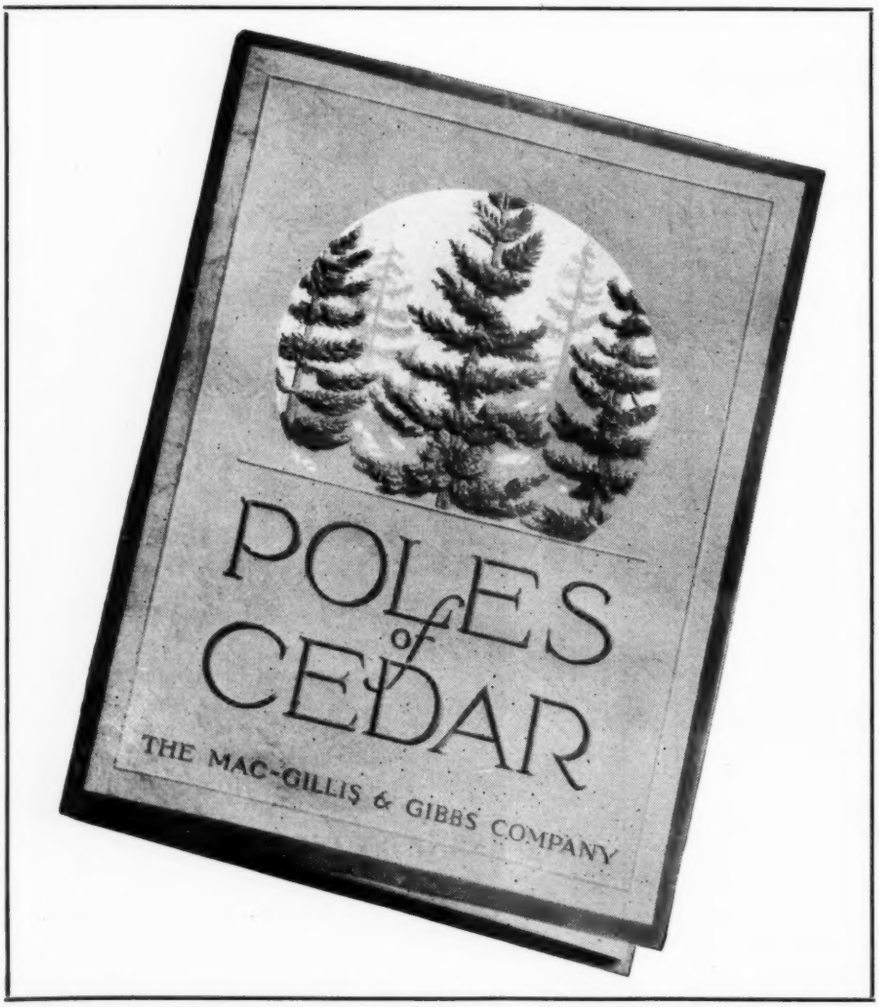
"One of my earliest recollections is of the time when I was a young pine sapling and my brothers and I were growing on a beautiful slope in the southern part of Angelina county, down in Dixie."

This shows the vivid and interesting style which is followed in the writing of this miniature book, which holds the reader's attention to the very end. Illustrations on every page lend attraction to the fascinating human interest story told in this simple autobiography.

Telephone men will be interested in reading this autobiography, copies of which may be obtained gratis from the Texas Creosoting Co., Orange, Texas.

Simplex Jacks Featured in Japanese House Magazine.

A recent issue of Nichiden Geppo, the Nippon Electric Magazine, published by the Nippon Electric Co., Ltd., Tokyo, Japan, describes some American products that are used in telephone plant construction work.



Reproduction of the Title Page of the New Booklet, "Poles of Cedar," Recently Issued by MacGillis & Gibbs Co., Milwaukee, Wis.

Nippon Electric Company Limited

を掛け前記動作を繰り返します。二十三時間要するに要する時間は土質の硬軟に依りき少長短あるは勿論なれども平均五分乃至六分、人員は普通二人乃至四人で操作します。

三三二號ジヤツク（小形）

本ジヤツクの押込し得べき鋼管の直徑は

四分三吋、一吋、一吋四分一吋、一吋半、二吋

附屬品は鋼製鍛 レダアー（徑一吋四分の一、長三呎）。

鋼製鍛 パイプ（徑二吋、長五呎レバー補足用）。

締金物 （高能率運搬に對する最單方法に適するもの）

重量は凡 百四十封度

附屬品 百五十五封度

三三四號ジヤツク（大形）

本ジヤツクの押込し得べき鋼管の直徑は

二吋、二吋半 三吋、四吋

附屬品は鋼製鍛 レダアー（徑一吋四分の一、長三呎）

鋼製鍛 パイプ（徑二吋、長七呎レダア補足用）

重量は凡 貳百拾封度

附屬品 八十八封度

（2） スクルー・ジヤツク

普通のスクルー・ジヤツクなれども顯著なる特長は作業中ジヤツクの鋼体の延程を正確に縮測し之を安全限度に止め得る事にして不正確なる目分量に依る外なく往々不慮の事故を遭起する一般スクルー・ジヤツクを比較すれば格段の利便を得られます。

三三四號 ジヤツクを三吋の鋼管を押込むの狀態でする所

揚程の最高度の外側に取付けある把手は平に運轉の便を得るに止まらず空の際めに前段さるゝジヤツク鋼体の重力を補ふて居ります。

鋼體は優秀なるアレイアイアン製にして龜裂を生ずることなく基底面積の上方に聳立する危險狀態になく揚程裝体と共通は同一の鋼材にてドロップ、フオージングの方法に依り

Reproduction of Page from Recent Issue of Nippon Electric Magazine, Published by Nippon Electric Co., Ltd., Tokyo, Japan. Forms for Substation Inspection Reports.

The accompanying reproduction of one of the pages of the magazine, which is of course printed in Japanese, shows the Simplex pipe-pushing jack with presumably a description giving its many good points. Simplex screw jacks are also illustrated on other pages of the magazine.

The Simplex jacks are manufactured by Templeton, Kenly & Co., Chicago, Ill., and are well and favorably known by telephone companies in this country. The Japanese magazine indicates that American tools are becoming known and more and more widely used in foreign countries.

Junior Multiple Stromberg-Carlson Board for Lawrenceville, Va.

The Home Telephone & Telegraph Co. of Lawrenceville, Va., recently placed an order with the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., for a two-position junior multiple switchboard. The new switchboard will be fully equipped to serve 260 lines and wired for any additions that may be required for several years.

The company feels that, for the conditions it has to meet at Lawrenceville, it has selected equipment that will furnish quality service at a reasonable rental.

New England Bell's Construction Plans for August.

At its regular appropriation meeting last month the executive committee of the New England Telephone & Telegraph Co. authorized the expenditure of $2,707,404 for new construction and improvements in plant, necessary to meet the demand for service. Including this authorization, the

total commitment of the company for plant expenditures this year is $18,790,632.

Of the amount just authorized, $855,181 is the estimated total cost of hundreds of routine additions to plant in all parts of the company's territory during August, apportioned as follows: Metropolitan Boston, $329,860; in other parts of Massachusetts, $300,427; Maine, $55,789; New Hampshire, $35,177; Vermont, $25,810; Rhode Island, $88,118.

The largest individual authorization is an appropriation of $682,750 to cover the cost of dial equipment in a new central office in Roxbury.

More Carrier Systems to be Installed by Northwestern Bell.

Six weeks of experiment with the test line between Omaha and Storm Lake, Iowa, of the first of the carrier systems put in by the Northwestern Bell Telephone Co., has yielded such satisfactory results that the directors have ordered the manufacture of sufficient equipment to supply 18 systems during the remainder of the year. Iowa and Minnesota will get most of these, with one between McCook and Grand Island in Nebraska. Those in Iowa will run from Des Moines to Iowa City and also to Spencer, between Davenport and Waterloo and Cedar Rapids and Fort Dodge; in Minnesota between St. Paul and Brainerd, Brainerd and Minneapolis and Alexandria and Minneapolis.

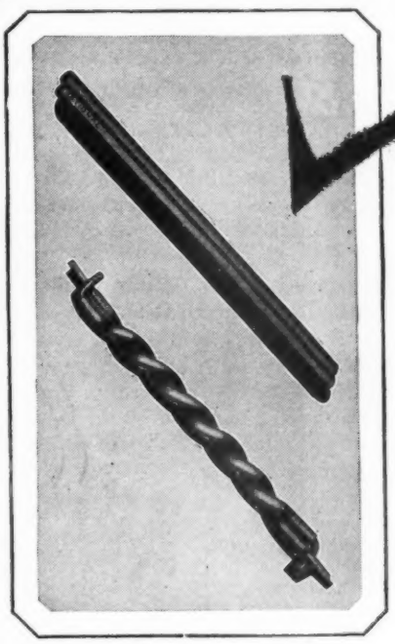
The test line is the only one of its kind in the world. It is supplied with an auxiliary amplifier, because of the 200-mile span, and on a long distance pole line. The Bell laboratories have been working for months on the problem of how to adopt the carrier or duplicate message system to short distances. These have been used on long lines, but were not economical on the shorter ones. The new type finally developed and now given a test is known as the type D or flivver carrier system, and will prove economical over circuits as short as 50 miles. They provide important additional or initial circuits between the large toll centers.

Nebraska's Richest Town Given Toll Connection for First Time.

The Northwestern Bell Telephone Co. has almost completed the construction of a number of lines in western and northwestern Nebraska intended to connect up its properties for toll purposes and also to supply facilities to local connecting companies.

One of these lines will connect Alliance with Hyannis, the latter town being given, for the first time, telephone connection with the outside world. This isolation has persisted in spite of the fact that Hyannis claims the distinction of being the richest town in the world, on the per capita basis.

It is the capital of the cattle country, where many of the cattlemen make their winter home.



Check These Savings with National Splicing Sleeves!!

WITH "Nationals" you actually do the work quicker than with any other method of making a joint, saving installation time.

Nationals give a standard uniform joint over the entire service. One connection is just as perfect, just as strong, just as durable as another, no matter what the conditions under which the joints are made. This means a saving of time and material.

When you use National Sleeves you do not have any defective splices and so you eliminate entirely all breaks at the joints.

The fact that "National" splices are unbreakable means a big saving of labor time for the same job never has to be done over. Doing the same job twice means a big labor time loss. Doing the job but once means more work can be completed in a given time.

Instead of setting up a high resistance which is very apt to happen with hand splices, National sleeves give a conductivity of better than 2 to 1.

National sleeves are drawn so tightly around the conductors as to form a practically welded joint. Thus the danger of corrosion, due to air and moisture is entirely eliminated.

In every way National Splicing Sleeves have been proven to be the most economical and efficient method of making line joints, their use is specified by the large companies demanding low construction and maintenance costs and high service efficiency.

Send today for Samples and Prices

The NATIONAL TELEPHONE SUPPLY CO.

5100 Superior Avenue, Cleveland, O.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Chesapeake & Potomac Refund on Rates Nearly Complete.

Refunds for telephone service due subscribers of the Chesapeake & Potomac Telephone Co. in Washington, D. C., in accordance with an agreement made with the Public Utilities Commission of the District of Columbia, effective June 10, 1926, are now 99.12 per cent complete. The amount to be refunded was $210,170.31, according to a statement just made by C. T. Clagett, general commercial manager of the company.

A report compiled by the company as of May 31, 1928, shows that $208,321.26 had been refunded. This leaves a balance of $1,855.46 due 1,544 subscribers. This is equivalent to $1.20 per account still due.

The company began making refunds on June 10, 1927, and at the end of 30 days, 88.6 per cent of the total amount due had been returned. At the end of the year 97.32 per cent had been refunded.

Making the refunds on live accounts was a very simple matter, Mr. Clagett states, but in the case of former subscribers who do not know have telephone service and many of whom had moved to foreign countries, a great deal of trouble was experienced in making the refund, owing to changed addresses.

With the aid of Postmaster W. M. Mooney, Mr. Clagett was able to locate many of these. Refund statements were mailed to former subscribers now in England, Germany, France, China, Mexico, Brazil, Cuba and the Philippine Islands.

Florida Company Authorized to Increase Rates on 16 Exchanges.

Authority for a revision upward of telephone rates at 16 exchanges over the state was granted the Florida Telephone Corp. by the Florida Railroad Commission recently.

The points affected are Kissimmee, Winter Garden, Apopka, Groveland, Dade City, Leesburg, Mount Dora, Tavares, Clermont, Umatilla, St. Cloud, Lake Butler, Alachua, Crystal River, Williston and Eustis.

In each instance, except at Eustis, the changes were authorized to become effective at midnight August 1. At Eustis, the revision is to become effective when a transfer from the present telephone system to the common battery apparatus is made.

The commission, in granting authority for the revision, found that present rates at each of the 16 exchanges did not yield a fair return on the investment.

Application for the increase was filed by the Florida Telephone Corp. last year. Public hearings were held and appraisals made by the telephone engineering department before action was taken by the commission.

Increased Rates When Converted to Common Battery System.

The Florida Telephone Corp. has been authorized by the Florida Railroad Commission to increase rates at its Eustis exchange upon completion of the conversion of its plans to common battery service. The rates authorized are:

Business, one party	$4.00
Business, two party	3.50
Residence, one party	2.50
Residence, two party	2.25
Residence, four party	2.00
Rural residence, less than 8 miles from exchange	3.00
Rural residence, more than 8 miles from exchange	3.50
Rural business, less than 8 miles from exchange	4.00
Rural business, more than 8 miles from exchange	4.50

The commission found that the present rates of the Florida corporation would not yield a fair return on the investment incident to the installation of the common battery system, and therefore granted the petition.

Operation of Rates Suspended by Order of Commission.

The operation of the proposed rates, charges and regulations contained in the schedule filed by the Galt Telephone Co. was recently ordered by the Missouri Public Service Commission to be suspended for 120 days.

The Galt company serves the towns of Galt, Spickard, Tindall and Dunlap with telephone service, and the commission was of the opinion that the rights and interests of the public appeared to be affected by the increases and changes in schedule and therefore held that the rates should be suspended pending a hearing and decision upon the reasonableness of the rates and changes.

Denies Application for Rehearing on Commission's Order.

The Ohio Utilities Commission has refused the application of the Home Telephone Co., of Ironton for a rehearing on the commission's order of July 10. This fixed a final valuation on the property of the company for the purpose of arriving at rates.

The commission fixed the reproduction valuation at $365,745.24, depreciation at $47,387.98 and the present value for rate-making purposes, $309,357.28. This valuation was protested by the telephone company as too low and it averred that it amounted to confiscation. Application for a rehearing was accordingly filed.

New England Bell Protests Pole Relocation on Main Highways.

The Maine Highway Commission was much taken back last month by the reply of the New England Telephone & Telegraph Co. to its request for the removal of telephone poles from the highway limits in the widening of state highways.

The matter was brought up by Attorney Frank G. Farrington of Augusta representing the new England Telephone & Telegraph Co. It appeared that in the rebuilding and widening of the seven-mile stretch of highway on the Cascade road between Portland and Dunstan, Me., there are places where poles as now located would be within the limits of the highway.

Thus the highway commission has requested that the telephone company remove and relocate these poles. The company says, however, in reply substantially that its poles are there by permission and if it is forced to take land for the relocation of these poles, the state must pay for the land.

Chairman Clyde H. Smith of the state highway commission said that this is the first case of the kind to come before the commission, but with the rebuilding of highways contemplated there would probably be a number of other similar cases. Attorney Raymond Fellows was requested to look up the question as it has been handled in other states and to see how it has been disposed of.

Free Toll Service Between Exchanges Discontinued.

The Wisconsin Telephone Co. was recently authorized by the Wisconsin Railroad Commission to discontinue the free toll service between its Mazomanie exchange and the communities of Prairie du Sac and Sauk City and place in effect for the toll service the standard toll rates of the company now on file with the commission.

From the testimony presented at the hearing it appeared that the Wisconsin Telephone Co. had been furnishing its subscribers at the Mazomanie exchange with free toll service to Prairie du Sac and Sauk City while messages originating in those communities for Mazomanie have been subjected to a toll charge for a number of years.

The question of the discontinuance of free toll service between adjoining exchanges has been before the commission in numerous cases within the past few years and the commission invariably held that where the communities affected were self-contained and the use of the toll service was not fairly evenly distributed among all the subscribers, the free service should be discontinued. This position was taken because of the discrimination that arises where the cost of the free toll service is included in the exchange rate and the service is used by a relatively small number of the subscribers.

As the testimony in the case showed that the communities affected are not dependent upon each other and that the use of the service is confined to a small percentage of the subscribers the commission believed that the free toll service should be discontinued and granted the petition.

Summary of Commission Rulings and Schedule of Hearings.

ALABAMA.

August 6: Hearing on petition of the New Brockton Telephone Co. for authority to construct a telephone line from New Brockton to Elba in Coffee county.

FLORIDA.

July 26: Florida Telephone Corp. granted authority for upward revision of rates at 16 of its exchanges.

MICHIGAN.

July 27: Hearing held on application of the Michigan Bell Telephone Co. for authority to purchase the Junior Telephone Co. of Okemos.

MISSOURI.

July 24: Applications for authority to purchase telephone exchanges and property in the Ozark region filed by the Ozark Central Telephone Co. of St. Louis. One application is for the purchase from the Peoples' Telephone Co. of local exchanges and rural toll lines at Vienna, Maries county, and Argyle Osage county, the purchase price to be $4,000.

The other application is for authority to buy from the Texas County Telephone Co. exchanges at Licking, Houston and Cabool for $40,000.

The Ozark Central company recently purchased a number of exchanges in Osage county, and is preparing to construct and operate a long distance line from Jefferson City south to Licking. The purpose of the company is to supply telephone service to a large district in the Ozarks now without direct long distance connection.

July 25: Operation of the proposed rates, charges and regulations contained in the Galt Telephone Co.'s P. S. C. Mo. No. 2, deferred for 120 days from July 24, 1928, to November 21, 1928.

July 27: Application granted of J. W. Whiteacre and Sophia L. Whiteacre to sell the Hayseed Telephone Co. to J. D. Thom for the sum of $7,500.

NORTH DAKOTA.

July 10: Social Telephone Co. ordered to disconnect its line between Newark and Brampton, and to reconnect its line between Cogswell and Brampton, after first putting its lines and exchanges in condition to render adequate service.

July 18: Queen City Telephone Co., Ryder, filed application for authority to place a first mortgage in the amount of $6,500 on the property owned by the company.

OHIO.

July 25: Increased rate schedule of Improved Telephone Co., of Strasburg, suspended for 120 days.

August 2: Order issued denying petition of Home Telephone Co., of Ironton for a rehearing on commission's order of July 10 fixing a valuation for rate-making purposes.

OKLAHOMA.

July 26: Authority to purchase the telephone exchange of the Orlando Telephone Co. granted the Midland Valley Telephone Co.

August 20: Hearing on protest to the action of the Vinson Telephone Co. building a toll line from Mangum to Vinson which was filed with the commission by Claud McAllister.

WISCONSIN.

July 30: Wisconsin Telephone Co. authorized to discontinue the free toll service between its Mazomanie exchange and the communities of Prairie du Sac and Sauk City and to place in effect for such toll service the standard toll rates of the company now on file with the commission.

July 30: Wisconsin Telephone Co. authorized to establish an exchange at Hales Corners and discontinue the present exchange at St. Martins and the present service in Hales Corners from the Milwaukee exchange.

Rates as authorized may be placed in effect for service furnished on and after the first day of the month following the date when service is established at the Hales Corners exchange.

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Incorporations and New Telephone Companies.

INDIANAPOLIS, IND.—The State Line Telephone Co. with a capital common stock of 100 shares no par value has been incorporated to own, lease, buy, sell, maintain and operate a telephone plant or plants in Montgomery county and counties contiguous thereto. The incorporators are J. Carl Swaim, Jessie L. Swaim and J. W. Robertson, all of State Line.

Elections.

LAKOTA, N. D.—J. J. Elsaas, Pekin, was re-elected president of the Sheyenne Telephone Co. at its annual meeting of stockholders held at Pekin. Other officers elected were L. O. Fredrickson, vice-president; B. M. Burreson, secretary and T. P. Bye, treasurer. The board of directors consists of the following: J. J. Elsaas, and L. O. Fredrickson, Pekin; Martin Flom, McVille; S. O. Hoveskeland, Hamar; Ferdinand Schindele, Tolna; O. H. Heimark, Warwick. Extensive improvements are planned by the company, which operates telephone exchanges at McVille, Pekin, Tolna, Hamar and Warwick.

Construction.

ALEDO, ILL.—Western Illinois Telephone Co. will make extensive improvements to the telephone service here.

COLLINS, IOWA—The Central Iowa Telephone Co. will expend $5,000 in remodeling and improving the local equipment and lines. The exchange building will be remodeled to meet requirements of the service extensions and improvements.

SPENCER, S. D.—The Spencer Independent Telephone Co. is installing underground cable here.

Miscellaneous.

DALTON, GA.—Announcement has been made by C. D. McCutchen, secretary, treasurer and general manager of the Dalton Telephone Co., of the sale of the entire stock of the company to J. L. Kirk and associates of Moultrie, Ga. Mr. Kirk has had years of experience in the telephone exchange business and is owner of several exchanges in Georgia and in Illinois.

MENDOTA, ILL.—Sale of the stock of the Northern Illinois Telephone Co., operating here and in a number of other nearby cities, has been sold to the A. W. Armstrong Co., of Aurora, according to an announcement by E. T. Wallace, of Sandwich, former president.

ROCKFORD, ILL.—Miss Dorothy Wilson of this city and Lewis Shepherd, manager of the Mineral Point, Wis., Telephone Co., were married July 6 in the parsonage of the Methodist church in Oregon, Ill. Announcement of the wedding was made the following night at a party given by Miss Ella Smith in this city, honoring the newlyweds. After a brief visit here they returned to Mineral Point to reside.

NEVADA, IOWA—The Story County In-

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IOWA MAN wants short time jobs repairing switchboards, installing cable, locating and repairing cable trouble. Geo. Bishton, Box 645, Cedar Rapids, Iowa.

POSITION WANTED—By A-1 experienced telephone man, commercial, traffic, plant, construction, maintenance. Specialize in central office and telephone equipment. Address 7273, care of TELEPHONY.

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WANTED—Telephone men experienced in magneto exchange work. No clerical work. These positions are open to men who can deliver and are capable of advancing. State fully experience and salary expected. Can use a married couple as troubleman and operator. Kansas Telephone Company, Topeka, Kans.

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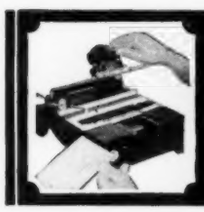

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WANTED—Large Class "A" Telephone Company wants Assistant Commercial Superintendent. Applicant should send answer to 7263, care of TELEPHONY, stating age, education, experience, references and salary expected.

(See page 42)

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dependent Telephone Co., a subsidiary of the Continental Telephone Co. has announced an increase in telephone tariffs, amounting to 25 cents on residence telephones heretofore $2 a month, and 50 cents on business telephones, which have been $3 a month.

LUM, MICH.—E. A. Waters, manager of the Lum Telephone Exchange, denies the published report that the Lum telephone exchange had been sold to the Condon interests of Chicago. He also states that it is untrue that this firm has bought out the Imlay City, Dryden and Almont exchanges.

The Condon interests are said to now own the following telephone exchanges in this vicinity: North Branch, Brown City, Millington, Marlette, Oxford, Capac, Yale and Metamora.

BAGLEY, MINN.—Bagley will probably have only one telephone system instead of two as the result of a 30-day option on the Clover Telephone Co. property which the Garden Valley Telephone Co. has purchased. The Garden Valley company is endeavoring to sell enough additional stock within the next month to carry the deal through.

CLINTON, MO.—The Missouri Union Telephone Co. was recently sold to the United Telephone & Telegraph Co. of Abilene, Kans., by the Standard Telephone Co., a Delaware corporation.

CELINA, OHIO—The Celina & Mercer County Telephone Co. has purchased the property of the Mendon Telephone Co., Ohio City Telephone Co., Willshire Telephone Co., and the Farmers Telephone Co. of Burkettsville.

Extensive improvements will be made as soon as possible, putting the companies in good operating condition.

COLUMBUS, OHIO—Announcement of the purchase of the Home Telephone Co., at Evansport, by the Ohio Associated Telephone Co., of this city, has been made by the state public utilities commission here. Sale of the Home Telephone Co., was made through Homer H. Bull, as trustee for that company, and the price was said to be $9,000 cash and the assumption of a $1,200 mortgage.

BRANCHVILLE, S. C.—The W. N. Albertson Co. of Omaha, Nebr., and Milwaukee, Wis., has purchased the Branchville Telephone Co. here, also the Estill Telephone Co. at Estill, the Mutual Telephone Co. at Hampton and the Jasper Telephone Co. at Ridgeland.

CASTLEWOOD, S. D.—The exchange of the Castlewood Telephone Co. has been purchased by the Dakota Central Telephone Co. The transfer was completed August 1.

FULTON, S. D.—The Dakota Central Telephone Co. has purchased, effective August 1, the exchange of the Fulton Telephone Co. here.

OLYMPIA, WASH.—A petition filed in the superior court by the Pacific Telegraph & Telephone Co. recently asks the appointment of a temporary receiver for the Thurston County Utilities Co., operating a telephone exchange at Yelm, southeast of here.

CLINTONVILLE, WIS.—The Tri-County Telephone Co., operating various exchanges in this vicinity, has been purchased by the W. N. Albertson Co. of Omaha, Nebr. and Milwaukee.

MENOMINEE FALLS, WIS.—The Hubertus Telephone Co., operating in this vicinity, has been purchased by the W. N. Albertson Co. of Omaha, Nebr., and Milwaukee.

OREGON, WIS.—The W. N. Albertson Co., of Omaha, Nebr., and Milwaukee, has purchased the Central Telephone Co., which operates exchanges at Oregon, Oostburg, Denmark, Deerfield and Cedar Grove.

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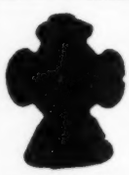
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